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THE MODERN UNIVERSITY SCHOOL—ITS PURPOSES AND METHODS.

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The earliest American medical schools were established in connection with institutions of general learning, as would have been expected from the fact that the physicians who founded them had been educated in Great Britain and France, where the medical colleges were, without exception, departments of universities. Only a few of the American schools, however, were established with such a relation, the larger majority being quite independent of any university or college connection, so that in 1877, twenty-five years ago, less than twenty of the sixty-five medical colleges then in existence were connected in any way with institutions of general learning. Subsequent to that date, however, such schools have become much more numerous, and of the one hundred and fifty-eight medical schools at present existing in America, between sixty and seventy are connected with a university or college.

These facts suggest some interesting queries. Why were not all of our medical schools, following the example of those first founded, established in connection with institutions of general learning? What motives have prompted the movement which, starting about 1880, has resulted in the large increase in medical schools so connected? What is the nature of the relationship which exists to-day between the medical schools and the universities with which they are connected? Has this relationship resulted in the largest possible measure of advantage to either the medical school or the university? And finally, what should be the nature of this relationship in order that the best results may be secured?

THE DIFFERENT CONDITIONS IN THE EARLY DAYS.

In answer to the first query it may be noted that there were no universities in America in the broad, European sense until comparatively recent years. Our institutions of higher learning were, as most of them still remain, colleges, devoted to purely academic instruction, in the classics, mathematics and philosophy. Such an institution has nothing in common with the professional school, and there can be little advantage or propriety in any connection between them. Then, too, it was hardly possible to establish the medical school on such a basis as to make it a fit member of a university organization. The rapidly-growing country demanded physicians in large numbers, trained as best they might be for practical life, but with requirements and the expense of the college course such as not to place it beyond the reach of all but a few students. Until the middle of the last century the majority of students entered the practice of medicine through an apprenticeship with a preceptor. The chief problem was how to induce these students to spend any time at all in the medical school, and to have exacted high requirements for admission, and a prolonged and expensive course would have been to defeat the very purpose for which the school was established. But a college with such standards, little or no restriction as to preliminary education, graduating after attendance on two, four or five months' sessions of repetitional lecture courses, could not fittingly have been made a department of a true university.

Thus medical colleges came to be established by medical men as independent institutions, sometimes, it is true, with other than the highest motives, but, on the whole, with an honest purpose to meet a real need. In passing judgment on these colleges and their founders due regard must be taken of the conditions which obtained at the time they were organized. In the absence of endowment or financial aid from the state the college had no resources excepting from the fees of students, which were of necessity low. It was imperative that the standards of the school should be such as to insure a sufficient number of students to maintain it on a working basis. For the past twenty-five years there has been no real demand for more medical colleges, and the judgment if not the motives of those who have instituted most of the colleges established within this period may well be questioned, but previous to that time the physicians who established the medical colleges of the old type were, with few exceptions, animated by an honest purpose, and possessed a logical and discriminating judgment in adjusting the standards of education very closely to the needs and conditions of the times. These institutions, sometimes styled commercial, never, so far as I have knowledge, yielded a direct money profit, though the indirect return to the occupants of the clinical chairs was in many cases large. Fortunately, the demand for physicians is no longer such as to compel the maintenance of schools with low standards.

THE TRUE UNIVERSITY.

The true university dates its inception in America from the founding of the Johns Hopkins University, which within a few months has celebrated its twenty-fifth anniversary. From this institution, with its emphatic pronouncement that the extension of knowledge by original investigation must constitute the very essence of the true university, can be directly traced the origin of the university idea in this country. Soon Harvard, Yale, Columbia and Pennsylvania caught the new spirit, and the founding of the Clark University in

the early '80s, with the growth of Cornell and some of the state universities, gave evidence of the fact that the university idea had taken deep and abiding root in American soil. Unfortunately, however, many other colleges, entirely lacking the means, the men or the equipment essential for true university work, stimulated by a feeling of rivalry, became ambitious to pose under the larger name. Mistaking mere multiplicity of departments and a large enrolment of students as the essential features of the university, they promptly became, by a mere process of rechristening, nominal universities. Naturally the next step was to institute professional departments, and, as in many cases, colleges of law, medicine, dentistry, pharmacy and the like, already established and prosperous, were located in more or less close proximity, the ambitious university found it much easier to expand along these lines by a process of amalgamation than by the creation of wholly new departments. The professional schools were, in most cases, more than willing to enter into such an alliance, for they, too, had caught the university idea in the same superficial way, and had come to feel that a university connection of some sort was the order of the day, and that the medical school must be so connected to be in vogue. Yet another motive was found in many cases in the rapidly-increasing cost of maintenance. The introduction of laboratory methods, the necessity for salaried teachers in the fundamental branches, and for the maintenance of hospitals and dispensaries to provide adequate clinical material had increased the cost of the medical course beyond the student's ability to pay for it even when the fees were increased to twice those formerly charged. It was obvious that governmental aid or private endowment must be had and that this could seldom be secured by the medical college as an independent institution.

THE NOMINAL CONNECTION WITH A UNIVERSITY.

The character of the relationship, however, which exists between the college or university and the medical school has been in the large majority of cases purely nominal, as evidence of which a specific case will serve. I have in mind an institution which blossomed forth in a few months from a college with less than four hundred students into a university with an enrolment of nearly twenty-five hundred. An analysis of the student list, however, discovers the fact that about eight hundred of these students were in the medical college, which had added to its title "The Medical Department ——— University," over four hundred were in a dental college, similarly allied, some two hundred in a law school, and a large number in a school of pharmacy. The number of students in the actual collegiate departments had not increased nor had the number of members in the faculty, while the courses offered and the character of the work done had not been materially altered. And what was the nature of the union between this "university" and its constituent professional schools? Purely nominal. They had not surrendered one iota of their autonomy. The separate board of trustees and faculty were in each case retained intact, having entire and unrestricted control over the finances of the professional school, of appointments to its faculty, of the standards of admission and graduation, and of all its other affairs. These departments were located several miles from the university, and the only visible evidence of their connection with it, aside from the printed line on the announcements and letter heads, was the appearance of the president of the university to confer the degrees at the annual commencement.

While this example represents the extreme degree of looseness, in such a connection, it differs only in a degree from that of the large majority of the medical schools now connected with universities in this country. May not the real value of such an alliance, to either the university or the professional school, be fairly questioned? There has been a disposition to attribute to these university connections the rapid progress which has taken place in medical education in recent years, but it is difficult to conceive how such a purely nominal relation can have had much influence in this regard. This progress, comprising the elevation of the standards of admission and graduation, the lengthening and grading of the curriculum, the introduction of new branches and of improved methods of instruction, has come about as the inevitable result of the advancement which has been going on in all lines of education. The development of the true university and of the university spirit in America has had much, indeed most, to do with it, but not through any such nominal relationship as in the case above cited. It is a singular fact that even in the older medical schools, which were from their inception university departments, the relation of the medical with the general faculty has had so little of unity or intimacy about it. The medical department is usually removed by some distance from the university proper, the faculties never meet together, and in almost every respect the medical school is conducted as an independent institution.

THE PROPER RELATIONSHIP TO THE UNIVERSITY.

The largest service can never be accomplished by the medical school nor can the fullest measure of advantage result to it or to the university from such a purely nominal relationship. What, then, should be the nature of the union between the medical school and the university of which it is a part?

It must be made an intimate, integral part of the university. Its financial management must be given over wholly to the board of university trustees, a body of laymen with large business experience, deriving no pecuniary advantage from this position and commanding the fullest confidence of the community. Only by such an arrangement, and the assurance of wise and disinterested management which it affords, can private endowment be successfully invited. It would be of distinct advantage to the university to have at least one medical man on this board of trustees. The medical teachers must be members of the university faculty, sitting in its councils and having a voice in the educational policy of the whole institution, while, on the other hand, the conduct of the medical work should be subject to the advice and approval of the general faculty.

THE FUNDAMENTAL BRANCHES.

The teaching of the fundamental medical branches which constitute the first two years of the curriculum, as now arranged, should be conducted in the corresponding university departments of physics, chemistry, anatomy, zoology, physiology and bacteriology. Even pharmacology and fundamental pathology should be so taught, for in the widest and best sense these sciences are branches of general learning and should be provided for in the university quite apart from their medical significance. The advantages of such an arrangement are many and important. It will obviate the expensive duplication of departments as they exist now under the prevailing system. Most of these branches are at present taught in the university proper, in well-appointed laboratories, by

men who are devoting their lives to research and teaching in their respective lines, yet at the medical school of the same institution this expensive equipment is duplicated and another corps of teachers employed, either on a similar basis, or more often as men who are primarily practitioners of medicine, only incidentally teaching these subjects in a perfunctory way while waiting for some incumbent of a clinical chair to vacate by death, resignation or otherwise, and thus make possible the fulfilment of their real ambition. Of more importance is the fact that these subjects can only be taught in the right way in the university proper, for only there can they be so pursued as to lay a broad, thorough foundation for their subsequent application to clinical medicine.

MEDICINE AS APPLIED SCIENCE.

Medicine is applied science. Its practice consists in the application of the principles, facts and methods of chemistry, anatomy, etc., to the study and treatment of the diseases and accidents of the living body. In the pursuit of any applied science it is surely the logical method to master the general principles and methods first and to proceed therefrom to a study of their application in any specific direction. Fundamentally the chemistry which the physician needs to know is quite the same as that required by the metallurgist, the manufacturing chemist, the pharmacist, or one in any other vocation where chemistry is concerned. It is only in the application of chemistry along these special lines that the methods differ.

The medical school has for years been attempting to teach its students the fundamentals of chemistry and their specific application at the same time. In the short course of two five months' sessions there seemed to be no escape from this. But what was the result? The student, crowded for time and jealous of every minute, sought to learn, as his professor sought to teach him, those isolated facts of chemistry which seemed, at the time, to have most direct bearing on medicine. Yet no teacher, however wise, much less any student, could possibly anticipate the chemical knowledge which might be of medical import a few years in the future, in the rapidly-progressing art and science of medicine. The result was a half knowledge mostly soon forgotten. If the medical man is to have a groundwork in chemistry which will enable him to keep abreast with his profession, he must be so trained in the fundamental facts and principles as to enable him to keep in touch with the advances in that science, to read its literature intelligently and to apply the frequent new discoveries to his daily work. To illustrate: ten years ago the remarkable facts of physical chemistry relative to the behavior of mineral salts in very dilute solution—the so-called ionic condition of matter—would have been pronounced by any chemist as among the most theoretical and impractical facts of that science, yet already the investigations of Loeb and his pupils have demonstrated these facts to have a most important bearing on physiology, pathology and pharmacology. Indeed, it is not too much to say that these facts of physical chemistry, which we owe to Arrhenius and van t'Hoff, offer an apparent promise of a solution of more problems in the fundamental and practical medical sciences than any others now known to us. Few physicians trained by the older methods of the medical school, have been able to keep pace with these developments or even to read them understandingly, but to the medical man who received an adequate training in chemistry in a college or university, they present little difficulty.

What has been said in reference to chemistry is equally true of anatomy, both gross and microscopic, of neurology, embryology, physiology and physiologic chemistry, of bacteriology and pathology. Studied primarily in the atmosphere and by the methods of the university the ground-work of these sciences is laid in a broad and comprehensive manner which enables the student to follow their progress in later years and their specific application to medicine and surgery is easily acquired. Pursued in the illogical, unsystematic manner of former years, they are never mastered and too often the physician soon awakes to the unpleasant consciousness that the facts acquired at such a laborious expenditure of time and energy have most of them flown from his memory. Not only has he failed to keep abreast with the newer knowledge—he has forgotten the old. Life is too short and time too precious to be wasted in memorizing facts that must soon be forgotten.

THE BENEFITS OF THE UNIVERSITY ATMOSPHERE.

Great benefit will come to the student from two or three years spent in the atmosphere of the university in the daily companionship of men who are masters in their several departments and who, as investigators, are seeking to add new knowledge by their own discoveries. The spirit and method of the research worker is exactly that of the successful practitioner of medicine whose every case is a problem, never exactly like any other that has been met before. Such problems are never satisfactorily solved by routine rules of diagnosis and treatment, but only by the exact painstaking examination of the facts in the particular case and the application thereto of the principles of anatomy, physiology and pathology. The successful practitioner is he who is most completely a master of this "investigative" ability, and who avoids most effectually the pressing temptation to become a "routine" doctor.

Of the influence on the student of the social and intellectual life of the university it is hardly necessary to speak. No environment is more conducive to the development of a strong, broad-minded influential man and citizen, and that is what we would wish every physician to be. The transfer of the teaching of the fundamental branches to the halls and laboratories of the university proper, will do more toward the creation of a strong and influential profession than any other plan that has yet been tried. For this reason, and because it is adaptable to so many medical schools, it seems to me to be the most progressive and far-reaching movement which has yet been made in medical education.

THE PURPOSES OF THE UNIVERSITY MEDICAL SCHOOL.

The purposes of the university medical school, organized on the lines indicated, will be broader and more comprehensive than those of the existing medical schools because of its larger facilities and possibilities. They may be briefly summarized: 1. The preparation of men for the practice of medicine—undergraduate instruction; 2, the training of selected students for teaching and research work; 3, to offer opportunities for practitioners to keep pace with the advance of medicine—such as are now afforded by the policlinic schools; 4, the preparation of men for public health service; 5, to extend the bounds of medical knowledge by affording opportunity and encouragement for research work; 6, to investigate and pronounce authoritatively on alleged new discoveries bearing on medicine, and 7, to educate the public along medical lines by the methods of university extension.

THE UNDERGRADUATE STUDENT.

The preparation of young men for the practice of medicine in the usual sense of the term, must always constitute the largest and most important function of the university medical school. And by this is meant the education of students for the humblest as well as the most exalted walks of the profession. Time was when the college or university was an exclusive institution, whose members were disposed to feel themselves removed from the world at large, set apart for certain special and exalted duties. Happily that time is past and the modern university seeks above all things to keep in touch with and to supply the needs of the world of affairs, wherever and whenever it can do so. Witness the rapid growth of the university extension, of correspondence courses, of short courses in agriculture, pedagogy and the like, and of the establishment of departments of agriculture, economics, banking and commerce, journalism and other ultra-practical branches.

THE STANDARDS OF ADMISSION.

The attitude which the university medical school assumes in regard to this matter will largely determine its standards of admission and graduation. While the university must stand always for the highest practicable requirements, it seeks not to cut itself off from the education of men who are needed for the work of the world by placing these standards beyond the reach of all but a few. Its requirements must be adjusted to the conditions of the times and be gradually raised as the community is educated up to their endorsement and to the adequate appreciation and support of the men whom the university has trained. It would be a great misfortune if the university medical school were to confine itself to the instruction of the select few who would find adequate recompense for their expensive training only in the higher walks of professional life. Such a policy would inevitably result in a wide and ever widening breach between the few schools of this class, and the great number of medical colleges with low standards to whom would fall the teaching of the rank and file of the profession.

We hear much of an ideal standard of admission to the medical school. And what may that be? Surely not the bachelor's degree, for as conferred in this country by the thousand or more institutions empowered to grant it, it is no standard at all, its significance ranging from less than many high school diplomas to that conferred by the highest grade universities. One institution, to my knowledge, admits students from the grammar school, confers a bachelor's degree after two sessions of fifty weeks each, allowing the student during the same period to complete the course for the degree of Ph.G. If knowledge of certain specific branches be demanded in addition to the bachelor's degree, may it not well be asked why, if these are the essential things, the degree should be made a prerequisite at all?

The degree which affords the nearest approach to an ideal is that of Ph.D. This degree has been guarded with much more care in America than any other. It certifies, when from any standard institution, that the student has not only pursued a seven years' course of collegiate instruction, but that he has given evidence of capacity as an investigator—of the very qualities of mind, indeed, which are most demanded in the study and practice of medicine. But would any one contend that such a requirement could reasonably be exacted of all candidates for admission to the medical college under the conditions and emoluments of private practice at present in vogue? Such a demand would be "ideal" under ideal conditions and an ideal appreciation by the public, of the physician's merit and the compensation due him, but the truly "ideal" standard, in the most useful sense of the word, is that which best fits the graduate in medicine for the conditions of his time, and this must be, for a long time to come, not a fixed but a gradually increasing standard.

THE TRULY IDEAL STANDARD.

And what may be fairly demanded under existing conditions? Bearing in mind the readiness with which the medical schools have met the rapidly increasing demands of the last decade—demands, in large part created by the schools themselves—there can reasonably be exacted in the near future, by every medical school, a four-year high-school education, and, in addition, two years of college work, insisting that this be partly in chemistry, physics, biology, mathematics, English, German and French—branches which are especially needful as a preparation for medical work. And with such a preparatory course the student can procure the bachelor's degree in the university medical school by applying his credits for the first two years of his purely medical work on the course for that degree, without in any degree doing violence to existing university procedure. The fundamental medical branches, if taught in the university itself, by university teachers and university methods, have quite the same culture value as have geology, astronomy or any of the other sciences, and credits for work in these branches should count on the scientific or arts course in exactly the same way. Under such an arrangement the average student is able to secure the degrees of B.S. and M.D. in from six to six and a half years from the date of his entrance to college, should begin his medical work at the age of 21 or 22, and be launched into practical life, with a year of hospital training, at 26 or 27. The problem of launching young men into professional life with an adequate training at an earlier age than has been possible under the existing methods, has been much discussed by leading educators. In some of our best universities the course for the bachelor's degree has been shortened to three years. The plan here outlined, of telescoping the literary or scientific with the professional course, where they so nearly correspond, seems to offer a much more logical and satisfactory solution. The advantage to many students of a complete collegiate course of four years, as precedent to the medical school, is clearly recognized, and every inducement should be offered such students to prolong their course of preparation. The right of any school to insist on a four years' college course as a standard of admission may not be gainsaid. It is only meant to contend that it would be unfortunate for the community if all of the high-grade schools were to adopt such a policy.

Should any special medical degree be conferred on the student who has presented a bachelor's degree for admission? Not unless he gives evidence in his medical course of the superior capacity and attainments, which he should have derived from his longer course of preparation. And, if he does this, if he manifests the investigative ability, and accomplishes research work in the medical branches similar to that which is demanded for a master's degree or the degree of doctor of philosophy, one of these degrees should be conferred.

THE PREPARATION OF THE TEACHER AND INVESTIGATOR.

Recent changes in the methods of medical education have greatly increased the demand for men who have been especially trained for the work of teaching and investigation and who prepare themselves with the intention of devoting their lives to such work. Not the least, therefore, of the functions of the university medical school will be the education of this class of students. And how shall these students be selected? Shall the entrance requirements for these pupils be different from those exacted of the larger group who are preparing for the practice of medicine? I believe not, for no plan of examination can ever enable a faculty to select such men so wisely as will the observation of their daily work in the regular course of instruction. One of the most capable and successful investigators and teachers whom I have known possessed only a high school diploma when he entered the medical school, yet in his sophomore year he accomplished a piece of research work which would have done credit to a doctor of philosophy, and immediately after his graduation he was appointed to a responsible university position, which he fills with distinction. It is not at all certain that this young man has done an unwise thing in foregoing a collegiate career. True, his case is somewhat of an exception to the general rule, but provision must be made for such exceptions. Furthermore, it is of mutual advantage to the research worker and to the ordinary student, that they be educated in the same institution and in daily contact with each other—to the ordinary student because it is of the greatest advantage to him that he should be in the atmosphere and should catch the investigation spirit; from the standpoint of the research worker because the selection of such men can best be made from large groups of students who are revealing their special abilities and characteristics to their teachers in their daily work.

THE UNIVERSITY POLICLINIC.

In every progressive occupation, reports of progress from all over the world find their way most quickly to the large centers and men who are themselves engaged in teaching and investigation are most likely to keep informed as to the new discoveries which are being made. The physician engaged in a busy practice, far removed from such a center, finds it difficult, even with the abundant current literature and the aid of a good library and laboratory, to keep thoroughly abreast of the times. He finds it of advantage, therefore, to seek such a center from time to time, to spend a few weeks in special postgraduate study. The necessity for this sort of review on the part of the general practitioner has been especially pressing during the last few years, owing to the enormous and rapid advance of the medical sciences. How great has been the demand for facilities in this direction is evidenced by the large number of policlinic and postgraduate schools which have come into existence since 1882. These institutions have met a real need and have been of great service, but it is not too much to say that they have not been organized on the best possible basis nor do they offer facilities for the highest kind of work. A great variety of work is demanded by these policlinic students; some need courses even more fundamental than the ordinary undergraduate, for whole new sciences, like bacteriology, have been created since these gentlemen took their medical degrees; some few are really competent to enter on the study of and preparation for a specialty, while a few have the necessary equipment and qualities of mind demanded by research work of a high order. To adequately supply these various demands, needs an institution of large resources, a large faculty, and very large hospital facilities. Only the university medical school has anything like the equipment necessary for this work, and the instruction of practitioners, in the broadest, most complete manner, will constitute one of its important functions. The university policlinic will not be conducted on the "Make-a-specialist-of-you-while-you-wait" policy that has too often prevailed, but for the sound and legitimate purpose of enabling the practitioner to continue his student-life, and to keep in touch with the new knowledge and improved methods so that he may utilize them in his daily work. Its laboratories and libraries will be at all times open to the physicians in proximity to the university that they may the more thoroughly and exhaustively study their cases by the methods and apparatus and the literature not otherwise at their command.

THE EDUCATION OF THE SANITARIAN.

Courses in state medicine and sanitary science are a pressing need of the time. Preventive medicine has profited far more than curative medicine by the discoveries of recent years, especially in bacteriology. Our hope for the future lies in the education of the public in regard to matters already well known to the profession, in the enactment of suitable laws, and in the efficiency of properly trained health officers, city, state and national. State medicine constitutes a distinct specialty and its successful pursuit demands a particular course of study which should extend over at least two years. Nowhere can the facilities for such a course of postgraduate instruction be adequately afforded excepting in the university, with its many departments, its large corps of trained investigators and teachers, and its well-appointed laboratories. In the department of geology, there may be studied the character of rocks and soils and of physiography in their relation to water supply, drainage, sewage disposal, and the like; in the department of chemistry, instruction in water analysis, toxicology and the chemistry of food and drug adulteration, will be offered; in the department of zoology, a knowledge may be acquired of animal parasites and of the microscopic examination of animal foodstuffs for their detection; the department of bacteriology will occupy a conspicuous position in this course in state medicine for the study of the bacteriologic examination of water, of milk, and other foods, and the detection of the various pathogenic organisms; the theories and methods of disinfection should be fundamentally studied; in the department of pathology, connected as it must be with a large hospital, there will be taught the methods of conducting a postmortem examination, especially in connection with medicolegal cases. And, finally, practical instruction must be afforded, in the health department of the city itself, in such matters as house inspection, the testing of sewer traps and other plumbing, public vaccination, the detection of cases of infectious diseases, the institution and maintenance of quarantine, the registration of vital statistics, the best methods of educating the community by the circulation of pamphlets, through the public press, and otherwise. There are few health officers who would not heartily coöperate with the university in offering such facilities as this, as these students can be of great service to the health department in the conduct of its daily work, and they would thus make abundant return for the instruction received.

THE PROMOTION OF RESEARCH WORK.

The obligation of the university and of everyone connected with it, to extend the bounds of knowledge by independent research, is now universally recognized. Investigation of the unknown as distinguished from mere appreciative study of the work of others, constitutes the keynote of the modern university, and this will be no less emphatically a feature of the medical than of its other departments. Investigation is essential, however, not simply that the bounds of knowledge may be extended, but that the spirit and method of research may be inculcated in every student. It is important that this fact be kept in mind for a thorough appreciation of this purpose will affect most decidedly the attitude of the teacher toward his pupils. He is not discharging his full duty nor doing the largest service when he confines his attention and devotes his best energies to the few selected students who demonstrate special capacity for such work and give promise of developing into competent investigators. Naturally, his interest will be especially aroused in this group of pupils, but he has no less an obligation to inculcate the same spirit and to train in the same methods of work the less capable individuals who are preparing for the ordinary practice of medicine.

RESEARCH IN THE CLINICAL BRANCHES.

In several American universities superior opportunities for investigation in the fundamental medical sciences of anatomy, physiology, chemistry, bacteriology, pharmacology, embryology, physiological chemistry, and pathology, are now afforded, and research work of a high order is being conducted in these branches. Quite as important, however, are the clinical branches of medicine and it remains for the university medical school to provide the men and the facilities to take up research work along these lines. This means, in the first place, the provision of a corps of teachers in each of the clinical branches who, divorced entirely from the labor and distractions of active practice, may devote themselves unreservedly to teaching and investigation in their several departments. This does not by any means imply that there will be no place in the faculty of such a school for the teacher who is at the same time a practitioner of medicine. Medicine, as has been said before, is an applied science and in its teaching force there will always be need of men who are daily engaged in the application—the regular practice—of their vocation. A large part of the necessary instruction of the student can only be accomplished by such teachers. Nor will the active practitioner be excluded from the privileges and obligations of research. Most of the advances in medicine which have been made up to the present time have been accomplished by physicians in active practice. Doubtless some of these men might have accomplished more in the way of discovery had they been freed from the exacting duties of practice, but we may not say this of them all. Some of these discoverers doubtless found in the conditions of their daily work the very incentive and environment which was essential to their investigations. Certainly this has been true in the other applied sciences, as, for example, in electrical, mechanical and chemical engineering, some of the most important discoveries in which, not only in methods of application, but in fundamental principles have been made by men who were practicing engineers.

In the second place, investigation in the clinical branches demands the provision of special hospitals, absolutely under the control of the university, perfectly equipped and adequately supported, where patients may be studied under conditions which have not yet obtained in full measure in any hospitals with which I am acquainted. It will be of advantage, if there can be brought together in such a hospital, from time to time, groups of cases of the same or allied disorders. What might not be discovered, for example, from an exhaustive study of a group of forty or fifty cases of diabetes mellitus, gathered in one building for a few months, where the condition could be absolutely controlled? That every such hospital must have abundant laboratory facilities and a corps of trained assistants goes without saying.

THE INVESTIGATION OF ALLEGED DISCOVERIES.

From time to time there arise in medicine fads and 'isms and 'pathies, loudly heralded by their promulgators as the only and long-awaited panacea for all the ills that flesh is heir to, and such has been the history of the world since time began. Many such claimants for popular credence carry their own refutation and are no more worthy of investigation by the university than would be the claims of the newspaper weather-prophet or the street-corner astrologer and horologist. Some of these passing fancies, however, take a strong hold on the public mind, and much harm results, before the utter falsity of the fad is demonstrated, or, possibly, the small kernel of truth winnowed from the mass of chaff. Often it would seem as if the credulity of the public were in direct ratio to the absurdity of the claims of the system. The fancied division in the public mind of scientific medicine into so-called "schools," and the supposed animosity of the adherents of these schools toward each other, has precluded the possibility of any investigation and pronouncement from the independent medical college having any considerable weight or authority. May not the university with its large faculty, representing many phases of thought, and free from the suspicion of prejudice, perform an important service to the community by the impartial investigation of such claimants as seem at all worthy of serious consideration, and a candid statement of the facts? In the broad open spirit of liberality and desire for the truth, which should characterize the university, the advocates of any new system or 'pathy might properly be invited to present their claims before the faculty or a commission to be selected for that purpose. Such an investigation as that conducted under the auspices of the university of Pennsylvania a few years ago—the Seybert Commission for the investigation of spiritualism—occurs as an illustration of the thought here presented.

UNIVERSITY EXTENSION AS RELATED TO MEDICINE.

If the beneficent results to the recent enormous advance in our knowledge of preventive medicine are to be realized in any large measure, this can only be by means of the education of the public in matters of personal and community hygiene. The medical profession has been remiss in this direction, but this has been in large part owing to the difficulty of addressing the public without violating the established ethics of the profession. The practitioner, competent to give instruction, has hesitated to do so because of the certain imputation of ulterior motives, the charge that he was seeking to exploit his knowledge and so secure his own aggrandizement. A great work awaits the university medical school which it can accomplish by adapting to this purpose the university extension methods, which have been so successful in other branches of learning.

Especially available for this service as lecturers and writers will be those members of the medical faculty who are not engaged in active practice, and to whom, therefore, no suspicion of improper motives can attach. The vital and well-established facts in reference to infectious diseases, etc., advice in reference to personal hygiene, clothing, food; the abuse of intoxicants, the need of legislation in reference to sanitary matters and the enormous possibilities of wise enactments—these are but some of the items which may be effectively presented to the public by means of the university extension and correspondence courses, articles in the newspapers and popular magazines, and through other avenues of instruction. Existing organizations like the social clubs for either sex, university extension centers, churches, and the like, may be readily utilized in this work.

THE METHODS OF THE UNIVERSITY MEDICAL SCHOOL.

The methods of the university medical school will differ in some respects radically from those which have heretofore obtained. While didactic and so-called clinical instruction to classes of 200 or 300 students may continue to have place, that place will be a very limited one. Students must be taught singly or in small groups in the laboratory, at the bedside, and in the dispensary, where they may train their faculties and acquire knowledge at first hand by seeing, hearing and handling things, instead of at second-hand by merely reading or hearing what some one else has had to say about them. Then, too, education and not the imparting of information will be the prime subject of instruction. In the ten months formerly available there seemed so much knowledge to impart that there appeared to be time for little else, but with the thirty to thirty-six months now occupied by the medical course, and with the obvious impossibility of imparting any considerable fraction of our medical store in thrice that time, it has come to be realized that the actual facts selected for the student's acquisition are of minor importance, but that it is a vital matter that he acquire the ability to observe accurately, record clearly and concisely and to think logically along medical lines. This means that the scheduled work of the curriculum must consume fewer hours of the day—never to exceed six—that the remainder of his working day may be spent in the library, or in his room learning to use medical literature properly, to write clearly and to think! to think! to think! It is surprising how absurdly overcrowded, and how utterly unbalanced the curricula of most of our medical schools have grown. In not a few of them, eight and even nine hours of scheduled work being daily demanded.

THE ELECTIVE SYSTEM.

Nothing offers a more ready and satisfactory solution of this difficulty than the elective system—so long and successfully in vogue in some institutions of general learning and recently adopted, in whole or in part, by some medical schools. It may be defined as that plan by which a student, pursuing a course for a degree, is allowed some choice in the studies he shall pursue, in his methods of study and of the teachers who shall instruct him; to adapt, in a word, his course of study to his tastes, his ability and his needs. It finds its *raison d'etre* in two fundamental and obvious facts: the vastness of knowledge and the variability of individuals. If it were possible to encompass all medical knowledge within the limits of a four years' course of study, or if it were possible to select for all students alike those facts which are most essential for every one of them to know, then the question of curriculum would present little difficulty. Neither of these things is possible and therefore the items of information which are acquired by each student, exclusive of a few of the fundamental and important truths in each branch, are not of necessity nor with advantage, the same for each student. On the other hand, students differ very widely in mental make-up, and no plan of education can be successful in developing the best there is in each man which fails to take cognizance of this fact and adapt its course of preparation to each individual, or, rather, to permit the student to so adapt it by the election of his work with the advice and approval of his instructors.

It will be no purpose of the elective system to make specialists of the undergraduate student, and any tendency in this direction may be readily avoided. It is unfortunate that the term "elective" should have been used in such a restricted sense by some writers as applying only to a system where the student is allowed absolute freedom of choice as between major branches. All of the advantages of election may be secured in full measure by requiring a specified minimum of work in each branch, as in anatomy, physiology, medicine, surgery, obstetrics, and the like, but permitting choice as to topics, methods of study and of teachers. Such a demand together with the requirement of the approval of a dean or other officer of the registration card, and the subjection of the student to a thorough practical examination in each of the major subjects, previous to graduation, affords a perfect safeguard against this abuse. Moreover, the good sense and judgment of the student himself, which teachers are prone to underestimate, are, in themselves, a sufficient safeguard.

I have elsewhere discussed the merits of the elective system as applied to medicine,[1] and the limits of this address preclude a fuller presentation of this important topic at this time. It will suffice to say that in the medical schools where it has been adopted on the most liberal lines, it has proven eminently satisfactory and has been demonstrated to be quite as decided an advance in the medical as in other departments of education.

THE CONTINUOUS SESSION.

The continuous session, in one form or another, will be a conspicuous feature of the university medical school; that is to say, the school will be in session, with perhaps slight intermission throughout the year in northern climates where work in the summer months is feasible. A board of trustees composed of business men will be little likely to allow an expensive plant to lie idle three or four months of the year, any more than they would close a manufacturing plant, representing an investment of several millions of dollars, for a like period. And this does not mean that only special or supplemental courses for teachers, physicians or students will be offered during vacation period, but that full work will be done throughout the year, exactly the same during the summer months as at other periods. Such a plan is scarcely feasible except under the elective system, for reasons sufficiently obvious. The continuous session is especially advantageous to the self-supporting student, who may often find it more convenient to devote the winter months to some bread-winning occupation. It is, moreover, of assistance in subdividing the classes, especially for clinical work, which can only be done satisfactorily in small groups. Many diseases, too, are to be seen and studied in the summer which are peculiar to that season. The continuous session will

1. Bulletin of the Am. Acad. of Med., July, 1900.

enable the ambitious, progressive student to shorten the period between his matriculation and graduation, and this ought to be made possible. It is true that this is in contravention of the present medical practice acts and of the rulings of the several state boards of medical examiners—rulings which seemed necessary to correct a serious evil at the time they were passed, but there is no logical defense for the present chain and halter method of hitching students together and compelling all to go at an unvarying pace. A certain minimum amount of accomplishment should be demanded, but while one student might require five full years to complete such a course, another may do it equally well in three, and he should be permitted to do so. Alexander Hamilton completed a law course, ordinarily requiring three years, in four months—an extreme exception, to be sure, but illustrative of the great difference in power of accomplishment between individuals.

The same laboratory methods which have been so successfully applied to the fundamental branches must be utilized in the teaching of the clinical branches, and this means that the medical school must have hospitals —not necessarily large—under its absolute control and available for research work in the clinical branches by all modern methods. It means, too, that some of the clinical teachers will be wholly engaged in teaching and research work to the exclusion of practice, and an adequate corps of trained assistants, both in laboratory and clinical lines. The clinical faculty will, therefore, comprise two classes—those who are exclusively devoted to teaching, research work and hospital practice, and who are adequately compensated therefor, and those who are in active practice—both hospital and private, but who devote a portion of their time to teaching and investigation.

THE EXTRAMURAL CLINIC.

While the university must have research hospitals under its own control, the amount of clinical material which is required for the large number of students is so enormous, and the expense of maintaining large hospitals so stupendous, that it seems unlikely that the millions of money which such a plant would require will be within the control of the university in the near future. But even with unlimited means, it would be poor business policy to neglect the large amount of clinical material already available in existing hospitals, but unutilized for teaching purposes, and especially would this be unwise in view of the fact that the use of these patients for teaching purposes is certain to be of great advantage to the patients themselves. No patients are so exhaustively examined, so carefully studied and so well treated as those who are the subjects of clinical teaching.

In almost every large city are hospitals in which the members of the attending staff are anxious to teach; and students are sorely in need of clinical material. All of this difficulty may be adjusted by a system of extramural clinics. Needless to say that the members of the several staffs who are appointed to extramural positions should be selected with due reference to their capacity as teachers and investigators, and never should one be given such an appointment merely because he can command a large amount of clinical material. By judicious effort in many cases the appointment of competent men can be secured to hospital staffs to the betterment of the clinic and the advantage of the patients, as well as for the extension of the extramural work. The removal of these hospitals by some distance from the college is not an insurmountable objection, for students will cheerfully go a considerable distance to receive such opportunities if the courses are only so arranged that the time spent in going and coming be not too great in proportion to the hours occupied by the course. It is usually best to arrange these courses so they will occupy a half-day. In the very large cities the establishment of two or three clinical centers, where students may remain in residence for the whole or part of the year, will enable all of the hospitals to be easily reached. Extramural teaching is only possible under the elective system, where credit is given for the work on the course for the degree, for the student's time is too fully occupied to permit of his giving much time to work which carries no credit. The control of very large charity hospitals by political appointment should be no discouragement, for by the combined and persistent efforts of the faculty, aided by the influential men of the board of trustees, even these obtuse politicians can sooner or later be convinced of the enormous advantage to the institution and its inmates of this kind of service.

The necessity for great care in the courteous and careful handling of patients needs to be strongly emphasized, for nothing will be more certain to prejudice the public against clinical work of this kind than a harsh, discourteous manner on the part of the clinician, the undue and unnecessary exposure of the body sometimes resorted to, or the granting of too great liberty to the thoughtless student. An undergraduate should rarely be allowed to examine a patient except in the presence of an instructor. Properly conducted, extramural clinical teaching is of advantage to the patient, the student, the attending physician, the hospital; indeed, to all concerned, and it offers a ready and practical solution of a serious difficulty which just now presents itself to the medical school.

THE MIGRATION OF STUDENTS.

The migration of students from one school to another, such as is common in the German universities, is a plan which ought to be encouraged. Such a custom enlarges the student's latitude of election, broadens his mental outlook, and the constant interchange of students strengthens and stimulates the several colleges and the individual teachers.

PRACTICAL EXAMINATIONS.

The question of thorough, practical examinations as the final test of the student's ability to enter safely on the practice of his profession, has been much neglected in America. It is a matter of great importance and must be satisfactorily solved by the university medical school, but time does not permit a fuller discussion of the matter in this address.

THE NEED OF ENDOWMENT.

The expense of carrying out the scheme which I have briefly outlined for a modern medical school is enormous. With the largest classes, and even prohibitory fees, the income from tuition must fall far, far short of meeting that cost. In a word, the cost of a modern medical education has grown to be greatly in excess of the student's ability to pay for it. State aid or private endowment must be had if these plans are to be realized. With our present outlook private beneficence holds out much the larger promise, and in the hope of such assistance there is every reason to feel the greatest encouragement. The recent gifts to medical institutions and for the promotion of medical research on a princely scale, furnish conclusive evidence of the fact that men of affairs and of large capital, whose chief desire is to find a use for their means

which shall be of the largest service to the world, have come to realize that, in these medical channels, large gifts are more likely to yield a certain, speedy and bountiful return in good to the world than in almost any other. And so, in conclusion, let me assure you that the outlook is most hopeful. The modern university school is already in existence in three or four cities, and while it has not yet come to its full glory and usefulness, we may rest assured that the signs are most encouraging, and that in the near future we shall have in operation in America medical schools in advance of any which the world has yet seen.

SHOULD THE GENERAL PRACTITIONER HAVE A WORKING KNOWLEDGE OF THE OPHTHALMOSCOPE AND TRIAL LENSES?*

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Baas says in Handerson's History of Medicine[1] that "Specialism is *per se* an evidence of a civilization of high development: indeed, of one tending toward its downfall," and speaking of the division of medical labor in our larger cities, Handerson[2] says that "the dangers of running specialism to seed are very manifest."

It might be possible to demonstrate historically that excessive specialism is the forerunner of medical decay, so that if in the present discussion I run counter to modern medical thought I may find justification for doing so in the ups and downs of medical progress throughout the ages.

There is no necessity of my calling the attention of the members of this Section to the great importance of the ophthalmoscope as an aid to diagnosis. And yet, I fear that while it is so valuable to us and we accept its findings with such confidence we often fail to impress upon the general profession its extreme importance.

One of the most impressive lessons I ever learned happened upon the receipt of Wood's little inexpensive English edition of Haab's Atlas of Ophthalmoscopy. When it was delivered at my office there were two or three general practitioners and several medical students present. I expressed myself as doubtful whether colored pictures of the fundus of any value could be published for so small a price. In order to test the accuracy of the representations it was suggested that I first examine the plates and make my diagnosis of the case represented. I was expected not only to diagnose a case of retinitis, neuritis, choroiditis, atrophy, etc., but to express an opinion as to the probable general conditions: such as syphilis, Bright's disease, brain tumor, ataxia, etc. After going through the entire list of 105 plates and checking up all my mistakes by comparing my diagnosis with the printed text with each illustration, in the words of one of the gentlemen present I only fell down on six: one of these I diagnosed as congenital, opaque nerve fibers, but as the patient was a rabbit and I failed to diagnose the rabbit it was counted against me. This test proved to my mind that the plates were extremely valuable, but to the gentlemen present it was an object lesson in the value of the ophthalmoscope which they never forgot; and I believe all of them have become enthusiastic users of the ophthalmoscope. One of them, the late Dr. Tuckerman, a man over forty years of age, used it intelligently daily in his private and hospital practice. There is something most remarkable when you come to think about it, that upon a hasty glance at a cheap reproduction of the appearance of the fundus of the eye you are able to say of this one, the patient has Bright's disease, of that one, congenital syphilis, another, pernicious anemia, another, brain tumor, and of another, probably his parents were cousins, and so on through the list. When I have presented the subject to the student in this light and then explained to him how inadequately any picture, no matter how well executed, fails to portray the eye-ground as seen by the skilled observer, I have no difficulty in kindling an enthusiasm in the mind of the student to see for himself.

But I had intended to take it for granted that we all believe that it would be a good thing if every practitioner could use the ophthalmoscope intelligently. The only question being, is it practical? Is it possible for the average medical student in the time allotted to him or that he may take profitably from his other studies to gain a working knowledge of this instrument? Twenty years ago I should have answered this question in the negative. My recollections as a student in the Moorfield Hospital in London were disheartening where many students came from America and would hang around the clinic for weeks and months and I am confident that many of them returned home without ever having seen a fundus oculi.

During my early experience as a teacher of ophthalmology I often became discouraged after failing completely to aid the student in seeing the fundus, even after many trials. But the medical student has changed. He is quite a different animal from what he was ten or twenty years ago. The student that now enters a medical school has at least learned how to study, and after two or three years of careful, thorough, conscientious laboratory work, when he comes up to the senior year he brings with him not only a trained mind but a trained eye and a trained hand. And I find that it is the exception now, when a student with this thorough laboratory training does not see the fundus the first times he takes the ophthalmoscope in his hand. He not only sees it but is able to make a creditable drawing of what he does see. Formerly, I sometimes doubted the wisdom of spending so much of the time of the student in the laboratory looking through microscopes, but I find that the training of eye and hand is just the preparation they need to become skilled diagnosticians, physicians and surgeons. And while I still doubt the value of some of the things they learn there I am fully reconciled to their spending their time in work of such exceeding great value in training their faculties for the more important work they are preparing to perform.

My experience has been that the student who buys an ophthalmoscope at the beginning of his junior year gains a practical knowledge of its use before he graduates, providing he has sufficient opportunity in dispensary and hospital clinics; and I believe at the present time most medical schools have sufficient clinical facilities for them to do so. And they do it without encroaching upon the time that should be devoted to other studies. It is surprising in our school, which I presume is no exception, how many of the clinical teachers

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* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Ophthalmology, and approved for publication by the Executive Committee: Drs. Frank Allport, H. V. Würdemann and J. A. Lippincott.

1. Handerson's Translation of Baas' History of Medicine, p. 17.
2. Ibid., p. 857.

are becoming familiar with the use of the ophthalmoscope.

The practitioner who uses the ophthalmoscope is not usually content with his knowledge of ophthalmoscopy until he has mastered the trial case and is able to fit spectacles also. I know that the mere mention of the general practitioner fitting spectacles suggests to the minds of every one present the middle-aged or aged practitioner who, having failed to make a success of general practice, took a six weeks' post-graduate course, bought a brand-new ophthalmoscope and test case and came home prepared to teach us all how to snip muscles. The traveling optician is preferable. These men were never equipped as general practitioners; they are hangers-on, and not worthy of consideration. I have in mind the medical student as we find him to-day—the man trained in mathematics, physics, chemistry and biology before he enters on the study of medicine. The student thoroughly trained in numerous laboratories for two years supplemented by two years of clinical instruction and in most cases an additional year of hospital practice either at home or abroad. The practitioner with this training can not be judged by the standards established ten or twenty years ago.

Following the lead of Johns Hopkins nearly all the medical colleges of the country adopted the plan some years since of confining all the clinical teaching to the last two years of the curriculum. It has been found that this method has not proved as satisfactory as anticipated, and many schools are now providing clinical instructions for sophomores and freshmen as well as for more advanced students. It is the opinion of many medical teachers that it is desirable to bring the student in contact with the patient almost from the first day he enters upon the study of medicine. This, it is claimed, was one of the redeeming features of the old perceptor method of teaching. The student first saw patients with his perceptor and subsequently in the medical school received his theoretical education. The study of medicine should be a perpendicular rather than a horizontal investigation. The student should first examine the patient, follow the clinical history of the case, examine the secretions and follow the patient to the postmortem table, and then study the pathologic specimens in the laboratory, thus obtaining a complete concept of diseased conditions rather than an innumerable number of disconnected facts and observations in the biologic, chemical, anatomic, histologic, bacteriologic, physiologic, pathologic and pharmacologic laboratories. The work as now prosecuted is extremely valuable from a scientific standpoint, but being so far disconnected from the main object in view, viz., that of making good practitioners of medicine, that the student leaves the modern medical school ill-prepared to follow his vocation. It is claimed that we have effectually killed off the medical perceptor but have not supplied his place. The perceptor who used the ophthalmoscope taught his student to use it. The stethoscope, laryngoscope, ophthalmoscope and other instruments of precision in diagnosis should be put in the hands of the student the first year of his medical studies.*

Some years since the oculists of Ohio were summoned before the State Board of Registration and Examination to formulate a rule to govern the prescribing of spectacles by the opticians. Some of the younger ophthalmologists were very much in favor of a strict interpretation of the law, enforcing which would prevent all but graduates of medicine prescribing spectacles. I asked this question: If the opticians do not this work who will? We have over 3,000,000 people in the state, all of whom sooner or later will need spectacles. There are probably not more than 100 physicians in the state competent to prescribe spectacles intelligently. It is clearly impossible for them to fit the entire population with glasses. The general practitioners are unfitted by education, experience or inclination to do it, and until such time as they are willing to undertake this work I believe that it would be injudicious and unwise to interfere with opticians prescribing spectacles. The following rule[1] was adopted:

Resolved, That the act of prescribing and adjusting glasses in uncomplicated cases of visual defects shall not be held as practicing medicine, within the meaning of the law, but that the act of prescribing glasses or of adjusting the same, without the order of a physician in any case in which the vision can not be brought up to the normal, and which, in addition to visual defects, there exists any inflammatory condition, organic change, or disease of either the constituent or auxillary structure of the eye, *shall* be held as practicing medicine, within the meaning of the law.

In my address as chairman of this Section in 1894 I expressed the opinion that every practitioner should possess an ophthalmoscope and a case of trial lenses and that he should be able to fit spectacles much better than jewelers, druggists and traveling spectacle vendors who style themselves opticians. I am of this opinion still. But until such time as the general practitioner prepares himself to do this work the spectacle vendors will continue to reap the harvest which properly belong to the medical profession. It has ever been thus—quacks abound because the profession does its work poorly. We howl about overcrowding the profession, and yet the people of this country spend millions for patent medicines and thousands for legitimate drugs on physicians' prescriptions. The hardest chair to find a man to fill in our medical colleges is that of practice of medicine, and will continue to be so until the younger members of the profession are prepared to be all-around general practitioners. It is a mistake for every young physician to hope to become a surgeon or a specialist. If I were a young man entering the profession to-day, I would make a specialty of general practice, and would prepare myself to do much of the work that the surgeon and specialist now do.

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* See Bayard Holmes on the "Progress of Medical Education," THE JOURNAL A. M. A., Dec. 23, 1899.

TEACHING OPHTHALMOLOGY TO UNDERGRADUATES.*

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Vast changes have been wrought in the practice of medicine in the past quarter century and its teaching has undergone radical metamorphosis. Time forbids, and necessity does not demand, a review of this evolution.

Teaching, even to-day, is of secondary importance to the average medical teacher, practice demanding the most of his time and study, and as a consequence the whole scheme of teaching in most medical schools lacks system, and the different branches, and even different

1. Ohio State Board Medical Registration and Examination in First Report, 1896, p. 25.

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Ophthalmology, and approved for publication by the Executive Committee: Drs. Frank Allport, H. V. Würdemann and J. A. Lippincott.

portions of a branch, are taught entirely independent of each other, no co-relation being observed. The chaos resulting from this medley is like a vaudeville. Each star and satellite performs his act, and when the final curtain rings down there is left with the spectator a sense of incompleteness, because the entire performance is devoid of plot. It is time, therefore, for us to pause in our scientific work and give some attention to this subject.

This paper pertains solely to the teaching of ophthalmology to undergraduates and will be considered under two heads, i. e., method, and matter of teaching.

METHODS.

Didactic Teaching.—Many of our teachers are successful practitioners, and are able by virtue of their experience to give good clinics, and because of their practice can furnish the necessary material; but good practitioners are not always good lecturers. Lectures are of undoubted value when given by a good talker or illustrated in some manner that will enable the student to retain what he hears, as, for instance, by the introduction of cases, specimens, drawings, or use of the microscope or stereopticon.

Recitations.—The student should not be obliged to so occupy himself taking notes that he will miss much of the lecture and to avoid this we should have textbooks adapted to the student's needs from which lessons may be given. This recitation method of teaching is of extreme value, and is much neglected in the last year of the medical course. If desired, the regular lecture course can be given by one of the professors, for instance, and the recitation course by one of his assistants.

Clinical Teaching.—While it would be unwise to advocate any one method, we must agree that the most valuable way of teaching ophthalmology is by clinical instruction. Clinical lectures may be given before a full class, and a whole series of cases may be presented for illustration. In this manner the different types or stages of a disease may be exhibited or the differential diagnosis between like affections may be demonstrated. Then there is much to be gained by clinical demonstrations of the methods of examination and treatment, and these may be carried on in the dispensary before small sections. Students should have an opportunity for practice at such times. The operating clinic should be held before sections small enough so that every student will have opportunity to see the entire operation. Operating before an amphitheater full of students who can not see what is going on, is to be deprecated. Major operations, such as cataract extraction, even if the student never intends to perform them are of value, as they teach by object-lesson how to prepare a patient preliminary to operation, the technic of intra-ocular surgery, the objects, danger, results, etc., of such operations. The minor operations, such as the extirpation of chalazia, the opening of lachrymal abscesses, etc., are valuable because the student will probably sooner or later perform them himself.

Laboratory Work.—In histology, bacteriology, pathology, anatomy and physiology, laboratory methods should be taught the student before he takes up the subject of ophthalmology *per se,* by the teachers of those branches.

MATTER.

With the development of the science of medicine and surgery and the advent of bacteriology, laboratory teaching in chemistry, anatomy, histology, physiology and pathology now necessarily occupy more time than was required fifteen years ago to finish the entire medical course. In addition to this laboratory work and the subjects which were taught at that time there are many additional chairs, not to mention such courses as mechanotherapy, history of medicine, hygiene, sanitation, etc. All of the branches, including the original fundamental subjects of practice, surgery, and obstetrics, and the various specialties, have enlarged their scope, demanding more time for their teaching. Clinical teaching, in the meantime, has been increased to a great degree, and consequently we find each day more filled in the medical curriculum, now, when a medical course in a high-grade college consists of four years of eight months each, than when only two years of six months were required.

If you will study the schedules of the various leading medical colleges you will be surprised to find every day so full. You will find in the senior class that about thirty hours per week are required; that in many colleges a senior student is carrying from 16 to 20 branches at one time, and you will be able to realize how little time remains for study and digestion of the knowledge he is trying to gain. It becomes necessary, therefore, in preparing the course of study to concentrate and eliminate.

Concentration.—By this is meant the concentration of a branch within a shorter period, completing ophthalmology and otology, for instance, in eight weeks by having four hours a week instead of spreading them over thirty-two weeks of one hour a week. Concentration may be so arranged that the student will carry at one time only one-quarter the number of studies now required in many medical colleges. It enables him to remember from one lecture to another, and prevents confusion that is bound to exist when he is burdened with many branches at one time.

Elimination.—By elimination is meant the elimination of unimportant branches and irrelevant portions of important branches. This matter of deciding what should be eliminated is a difficult one. In earlier days the special branches were taught by the general practitioner and no attempt was made to teach details which the general practitioner will never have occasion to use in his practice, or if he does have use for them he will have forgotten them long before that time arrives, while he can easily post himself when the necessity arises.

There is a vast difference of opinion among teachers of the same subject as to how much should be required. By studying the various college catalogues, we find in ophthalmology and otology, that in one university there is no didactic teaching and only 52 hours of clinical teaching while in another 56 hours of didactic and 64 hours of clinical work are required of each student, and there is as much more optional clinical work. It seems, therefore, that the ophthalmologist is not the one to fully decide how much time should be allotted to ophthalmology, but that the whole faculty should coöperate in outlining the general course of study, apportioning the time as seems best.

Some teachers in ophthalmology believe that we should teach in detail not only all of the diseases of the eye, but ophthalmoscopy, refraction, unimportant operations on the eye, retinoscopy, the theories of color perception and what not, but where they find the time in the medical curriculum to give them this knowledge is difficult to understand. A proper preparation for refraction work alone requires an entire year of contin-

uous study and experience, and a superficial knowledge, such as could be gained in the time at the undergraduate's disposal, is worse than none at all. I believe there are certain portions of ophthalmology (and this is true of every special branch) which are essential to the general practitioner, especially if he is located in the country; for instance, the knowledge of how to differentiate glaucoma from iritis, because each of these affections requires immediate attention, and the treatment of these two diseases being opposite, a mistake might prove fatal to sight. He should be taught also how to attend to those things which he will meet commonly in his practice, even though they are not of a serious character. Not only should these things be taught, but the student should be required to learn them, and if he fails to pass a satisfactory examination he should not be allowed to graduate, for he would not be a safe practitioner. He should be taught the things he can do with safety and what things are dangerous in unskilled hands, for "fools rush in, where angels fear to tread," and many eyes and lives are sacrificed as a result of the ignorance and assurance of those who do not know their limitations.

In this process of elimination, then, we must require only as much time in the teaching of ophthalmology as will give the student a practical knowledge of those diseases and conditions which are the most common and the most important. Preliminary to the regular course on the eye from the teachers in those branches, he should gain a practical knowledge of anatomy, physiology, histology, pathology, and bacteriology, so that very little time need be occupied during the regular course in ophthalmology upon these subjects. In the regular course in ophthalmology he should be shown how to examine the eyes by inspection, how to evert lids, oblique illumination, the technic of ophthalmoscopy and be shown a normal fundus, the inspection of the cornea for foreign bodies, method of removing, the diagnosis of ulcers and other corneal diseases, the pupil, its changes in health and disease and in chloroform anesthesia, palpation for tension and ciliary tenderness, how to test and record the acuteness of vision. The common diseases of the eye, such as blepharitis marginalis, hordeolum, chalazion, dacryocystitis, simple conjunctivitis, trachoma, purulent conjunctivitis, phlyctenular conjunctivitis, keratitis (parenchymatous and ulcerative), iritis, sympathetic ophthalmia, panophthalmitis, glaucoma, injuries. Besides these, other diseases and conditions should be defined and causes given, such as trichiasis, entropion, ectropion, ptosis, orbital cellulitis, pterygium, staphyloma, scleritis, cyclitis, choroiditis, retinitis, intra-ocular tumors, cataracts, optic neuritis and atrophy, amblyopia. Under refraction the symptoms which result from errors of refraction should be fully explained and the ordinary terms defined.

Elective and Optional Courses.—These may be given to supplement the required courses, which will cover as fully as the time allotted will allow those less important portions. In order to avoid possible confusion I will define the words elective and optional, and I can best do this by quoting Professor Dodson of Chicago University:

> Election may be defined as that method under which the student pursuing a certain course looking to the acquisition of degree or diploma, is allowed some choice in the courses of study which he may take. The term "election" is not applied to those studies which are taken by special students, who enter the college with no intent of completing the course and receiving the degree. It is convenient, furthermore, to distinguish between elective and what may be called "optional" courses, an optional course being defined as one which a student may take in addition to his regular work, and for which no credit is given, excepting perhaps a special certificate setting forth the fact that the student has taken the said optional course.
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> To the teacher the elective system presents the advantage of the greatest possible incentive to good work. An instructor whose students are required to be in attendance upon his lectures, whether they would or no, is under no obligation to make his course the best possible and he is prone to become careless and indifferent in his teaching. If, on the other hand, the attendance upon his classes is left to the choice of the student, who is at liberty to elect other similar courses taught by other teachers in the faculty, the attendance will depend solely upon his efficiency as a teacher, and constitutes a continual and most powerful inducement to the best work.
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> It is, however, the testimony of all who have had to do with the elective system that the greatest benefit which results, therefore, is the difference in the spirit which animates both student and teacher. It is wonderful, indeed, to observe the difference in the interest, the enthusiasm, and the energy with which a student will pursue a course of study which he himself has chosen, in contrast to that which he has been compelled to take.

CONCLUSION.

In conclusion, I desire to request a free and frank discussion of this important subject, which my paper has presented in only a superficial manner. While there is no doubt that too little attention was formerly paid to the specialties, I believe that we are going to the other extreme and trying to teach too much. We are giving too much detail, and are wasting valuable time in the attempt to cover the entire subject with all the theories and varieties of diseases that to us as specialists seem important. Neurologists, dermatologists, ophthalmologists, and other ologists who work along specific lines are apt to become narrow and overestimate the importance of their particular branch, and to forget that there are other branches more essential in fitting a man for practice. We must bear in mind that we are educating our students to become general practitioners, and it is not within the scope of the undergraduate medical college to make specialists of them. If we occupy more of their precious time than is necessary to teach them only those things which are essential to their general practice we are stealing time which should be devoted to the more important fundamental branches.

DISCUSSION

ON THE PAPERS OF DRS. BAKER AND TODD.

DR. SWAN M. BURNETT, Washington, D. C.—The proper consideration of this proposition implies a definition of several terms, and the answers to some collateral questions.

In the first place, what are we to understand by the term "general practitioner"? Ordinarily, we mean the man who gives his attention to internal medicine alone, to the exclusion of the well-recognized specialties, in which case he should be considered quite as much of a specialist as the ophthalmologist or gynecologist; or, we may mean the man of whom the country doctor, or the members of the medical branches of the army and navy are the types, who are expected to combat all human ills from toothache to those diseases demanding an abdominal section or the ligation of the large arteries.

Evidently, the needs of each of these extremes of general practice, as regards the use of the ophthalmoscope and test lenses, must be widely different.

Then, again, what are we to understand by a "working knowledge"? Is it meant mere ability to illuminate the fundus by the ophthalmoscope, or the power to elect any changes, however minute, from the normal; or, in the case of test lenses, the capacity to do more than establish the existence of

hypermetropia or myopia, or possibly the presence of astigmatism?

As a necessary corollary to these questions, arises the equally important one, how much pertaining to these subjects shall be taught to the undergraduates in our medical colleges?

To state, categorically, my own opinion, formed after a by no means inconsiderable thought and observation, I believe that, barring the very exceptional cases, the less the general practitioner of any kind has to do with a practical working of the ophthalmoscope the better, and for the following reasons:

First, ophthalmoscopy is an art, and an art for the average man by no means easy to learn, and, moreover, an art which requires constant practice and a large experience to bring to such a state of efficiency as to enable it to be of certain benefit to the man who employs it. Here as elsewhere, "a little knowledge is a dangerous thing," for it is just those cases where it would be of most service to the general practitioner that require that expertness without which confusion is sometimes worse than confounded and absolute harm may come through a false diagnosis. The ophthalmoscope to be of any real value to the practitioner must be used by an expert. Such an expert is to be found around the corner in even our small towns now, where eye specialists abound. I have never yet seen a general practitioner whose ophthalmoscopic knowledge was likely to be of any benefit to himself or to his patients. There are, of course, exceptional cases where this broad rule does not apply. A clever and enterprising general practitioner may take up ophthalmoscopy as a fad, just as he would go into stamp collecting, or painting in water colors, or for the purpose of impressing his patients with his wide attainments, but like fads in general, it will not redound in the end to the permanent good of anybody.

Of all the general practitioners it would seem that the members of the medical corps of the Army, Navy and Marine-Hospital Service, who are often far removed from expert skill, and have to depend upon themselves alone, would be required to possess such a "working knowledge" as we are now discussing—and, as a matter of fact, it is announced as one of the requirements for admission to these services. But, I find after inquiry that it is practically a dead letter, and that while a knowledge of the working of the ophthalmoscope is placed to the credit of the candidate, in the same way as the knowledge of another language would be, an actual test is seldom or never made, and mainly for the reason that the examiners themselves, as a rule—and I place it to their credit—do not deem themselves competent to conduct such an examination. It should be stated in this connection, however, that Surgeon-General Sternberg informs me that in the Army Medical School, which he has established in Washington, the use of the ophthalmoscope is now practically taught to the young medical officers.

That an expert familiarity with the ophthalmoscope might at times be of value to the country doctor is also to be admitted, but here again, unless this knowledge be thorough, it is much more likely to lead him into trouble than out of it. All of us remember the marvelous and unique pathologic conditions of the fundus we were constantly running up against, particularly congestion of the retina, in our callow days of ophthalmoscopy. Of all the methods of physical diagnosis, that of ophthalmoscopy requires most skill and the largest amount of experience to make it at all serviceable to the examiner, and such skill and experience the general practitioner can never, from the nature of the circumstances, have. It follows as a necessary corollary, if the position I have taken is a tenable one, that we should not demand that the average undergraduate should waste his time in attempting to acquire a "working knowledge" of an instrument he will never use. When we shall have established, as we must in time, the elective system in our medical curriculum, then those who elect to take an ophthalmoscopic course should be thoroughly instructed in the use of the instrument, and for this purpose one hour a day, for three months at the very least, should be given to each student. Most students will require twice that length of time, and some even more, before they can command such a skill in the manipulation of the instrument as to give them confidence in its use. The time given to the useless and unfruitful effort to give the average undergraduate a "working knowledge" of the ophthalmoscope would be much better spent in acquainting him with the external diseases of the eye and particularly the diagnostic signs of iritis, conjunctivitis, glaucoma and the various forms of keratitis.

It goes without saying, of course, that the principles of ophthalmoscopy should be taught as a part of physiologic optics, as forming an essential portion of that general and fundamental knowledge of the functions of the human economy that is necessary for a complete medical education such as we propose to furnish.

It is well, in my opinion, for a general practitioner, particularly when removed from a competent specialist, to be able to test visual acuteness and to determine by means of test lenses the probable existence of myopia or hypermetropia and possibly astigmatism. Anything more refined than this should not, as a rule, be attempted, though the ability to test the refraction of the eye and determine the muscular imbalance carefully would be of infinitely more value to him in the diagnosis and treatment of the cases that he has most to deal with, particularly headaches and obscure nervous symptoms, than the ability to use the ophthalmoscope even with skill.

DR. CASEY WOOD, Chicago—Most of us are guided in the opinion we form as to the advisability of teaching ophthalmoscopy to general students of medicine by the number we have to deal with. Those of us who have large classes appreciate the difficulties more than those who are not called on to instruct such large numbers. I may be pardoned for telling you something of the methods employed in the University of Illinois, because I believe they have a direct bearing upon the whole question.

After serious consideration of the subject, and after conferences between the professors of ophthalmology and their assistants we decided on this plan: that one man should give the "didactic" lectures in such a manner as to make his teaching plain not merely to those close to him, but to those who are, perhaps, forty feet away. To this end lectures are profusely illustrated by large charts, the stereopticon and the projection apparatus, and though that has not been, perhaps, quite satisfactory in teaching certain portions of the subject to a class of over 200, yet it has, I think, answered fairly well. With the projection apparatus, for example, one can throw a picture 14 feet square on a sheet, which can, of course, be seen in detail by men at a considerable distance from the lecturer.

Operating before a large class we have abandoned, because we have found it in every way unsatisfactory; the earnest teacher does not wish to feel that he is a party to such waste of time. To do a cataract extraction before a class of two hundred men, for example, benefits nobody except a few students on the front row of seats. It is much the same with the exhibition of patients; only those cases that exhibit signs of disease visible to students on the distant seats are shown. Thus we dispose of the didactic part of the teaching. For complementary studies the large senior class is divided into small sections so that patients with the commoner diseases of the eye can be successfully exhibited to them. Pretty much the same thing is again demonstrated in the dispensary. We insist upon it, also, on all occasions, that the eye signs of disease are as necessary for the general student as the heart and lung sounds. Why should the undergraduates avoid a study of the eye signs of disease? Yet that is just what in the past they have done. To arrive at a proper diagnosis they learn all the other symptoms of disease, but decline to investigate disease from the standpoint of the eye symptoms and we insist upon it that these are as important for this purpose as any other clinical evidence.

In the third place we have endeavored to teach students not merely the diagnosis and treatment of the commoner diseases of the eye, but the differences between eye diseases that are serious and those that are simple. We started out by having a program printed, a copy of which is given to each stu-

dent, who is told that he will be expected to pass an examination upon these headings, and we do not deviate from it. We have not succeeded nor have we attempted to make good ophthalmoscopists of our students even in this way; I do not think it is possible, for example, in the time at our disposal, to teach the undergraduate the use of the ophthalmoscope so that he can diagnose any except gross lesions of the fundus with any certainty. Perhaps it is possible to teach the ordinary student to diagnose such a fundus change as a marked case of optic neuritis, or, he may learn to see the fundus or to make some use the trial case, but I protest against the attempt to teach him that complex branch known as "refraction." I would rather have the patient go to an ordinary optician than have the average medical graduate work out a case of refraction. This contingency it is not necessary, I think, to meet in the West where almost every small town has a competent ophthalmologist. I do not believe in the danger suggested by Dr. Baker, that the people of this country will be neglected because of lack of ophthalmologists to look after their eyes.

Another experiment we have been trying is somewhat opposed to that entered on in other universities. The latter insist on the men having an academic training for the first two or this four years, obtaining their instruction in the university itself. They are not allowed to look at sick men and women, but give up their entire time to the elements of medicine and surgery. We have taken an opposite view of the matter and give clinics to freshmen and sophomores, in imitation of the good old days when the student went around with his preceptor. It is certainly popular with the men themselves and so far has succeeded very well indeed. We give these junior students much the same work we give the seniors. The printed program just alluded to is closely followed and if at the end of the session students can not diagnose a case of iritis, detect one of glaucoma and recognize the ordinary external diseases of the eye, then the man engaged in the teaching has fallen far short of the scheme so mapped out.

DR. W. H. WILDER, Chicago—This is a subject that has interested me greatly for a number of years as it has happened that I have had something to do with the scheme now in vogue in Rush Medical College.

I am heartily in accord with the views of Dr. Baker, that the general practitioner should know something of ophthalmology, and can not agree with Dr. Burnett, that the less he knows of the ophthalmoscope the better.

I can give you more clearly my views by telling you the character of work done in the Rush Medical College—which is the medical branch of the University of Chicago. In the first place, our students pursue the first two years in the university proper, in the biologic laboratory, and when they come to us they are prepared to apply the theoretical, scientific knowledge which they are supposed to have obtained in the university itself. The elective system has been in operation for a number of years. While a man can elect a certain course, he is required not to elect too many of the same kind at one time. He can elect a course in ophthalmology if he will, but can not omit such important things as obstetrics or surgery. He is marked in each subject according to the number of hours he takes. We find the method very satisfactory because there is a spirit existing between instructor and student that formerly did not exist when these studies were required. He is allowed to elect ophthalmology as one of his senior studies and we advise him to pursue the following course: first a course in the fundamental principles of ophthalmology; then a course in use of the ophthalmoscope, and finally he is put in the clinic, because not until then has he the tools with which to work. In his earlier clinical work we give him cases that illustrate normal conditions. He gets a course of didactic lectures, or rather recitations, in a limited class; following that a course in the use of the ophthalmoscope, and not until he has had these two courses does he engage in clinical work. We believe that a small class is essential, never exceeding ten, and that, of course, requires a large number of teachers. Our clinical classes in the eye and ear infirmary are limited to ten men and they can get as close to the operator as the assistant who is helping and in this way we can give them practical instruction. A man can watch the case through the whole course. He is never allowed to do clinical work until he has learned the method of examination of patients. He is not judged by his ability to make a diagnosis so much as by his ability to observe a case properly and bring out the salient points. If he has acquired correct methods of observation he deserves more credit than when he steps up to a case and makes a "snap-shot" diagnosis. We teach our undergraduates something of the use of the ophthalmoscope. We keep tabulated lists of cases scattered around town and we sometimes pay them a little to keep them coming to us just as they do in the clinics of Vienna and Berlin. The student is told how to use the ophthalmoscope and is required to make a drawing of the interior of the eye, just as he is required in the histologic laboratory to make a drawing of the section under the microscope. In this way the examiner can tell whether the man really sees what he says he does.

I think from the examination of the students that they do learn something about it. Of course, they can not become experts, but they can recognize promptly a normal or abnormal disc and have sufficient knowledge to enable them to know whether blindness is due to opacity of the media or to gross lesions of the fundus.

DR. EDWARD JACKSON, Denver—I think the discussion of Dr. Burnett on the teaching of ophthalmoscopy to medical students in general should not go without some additional remarks. I want especially to call attention to the value of ophthalmoscopy as a branch of general education for the medical man. There have been several very noteworthy instances of its cultivation by other than ophthalmologists—Hutchinson, Hughlings, Jackson, Gowers and others whose training in ophthalmoscopy aided them in becoming eminent in other fields; and who have spoken with strong emphasis of the value of that training in their subsequent careers. It is not only the value of using the ophthalmoscope, but the general training of the work of exact observation. We are trying to raise the requirements of the medical course and encouraging the development of laboratory courses, and it seems to me that in this connection the ophthalmoscope has been very greatly neglected.

Admit, for the sake of argument, that very few medical students learn to use the instrument so as to make a diagnosis of brain tumor or Bright's disease; the same thing is true with reference to the microscope. The ophthalmoscope is a microscope, a low-power microscope, the kind that is of the greatest value to the student, and it is a microscope used on living tissue. I think that the teaching of ophthalmoscopy as a branch of general medical training is not sufficiently appreciated even by ophthalmologists themselves; and I should regret to see this discussion go out without some expression of an appreciation of that value.

DR. GEORGE F. SUKER, Chicago—I think it has been the experience of most of us who teach that unless the student can see a cataract operation, or some major operation, he does not take very much interest in the subject. I think it is absolutely essential the way the curricula of our colleges stand now, that every student who is graduated should be able to describe the normal fundus, if nothing else. And, I make it my aim to pay particular attention to the normal fundus rather than to diseased conditions. The medical student does not and can not appreciate the dainty pathologic fundus lesions unless he fully knows the appearance of the normal fundus. If we can impress on their minds that in so many general diseases it is necessary to make an ophthalmologic examination so as to fully understand the case in hand we will not have labored in vain. But, in order to imbue the student with the importance of ophthalmoscopy it is the duty of the teachers in the various other branches to call especial attention to such diseases as have ocular lesions.

If the student is able to fully recognize the variety of normal fundi, he then can recognize an abnormality and if we achieve this in our teaching, why, a great deal will have been accomplished. In order to accomplish anything along the line of ophthalmoscopy, we should endeavor to give individual in-

struction to our students and not, as is often done promiscuously, turn a score of them loose on a patient in the dark room without sufficient guidance.

DR. LEARTUS CONNOR, Detroit—The principles of educating a student should be scientific and if scientific each part would be symmetrically related to every other as in a surgical operation and there would be one thought running through the whole thing. Applying this to teaching as we generally find it you will observe that there is much to be desired. Students should have this training if for nothing else than to let them see that there is something that is absolutely certain in medicine and absolutely certain in their work. It lets them see that somewhere there is a rock on which to stand. There is so much of uncertainty in medicine that it is too bad to prevent the attaining of what is definite. The teacher in each branch should be able to present the eye features of his own subjects, and so the student can see these in normal relations. I do not think as a Section we can lay down any dictum. It remains for the teachers of each college for itself to get together and determine what can be left out and what must be put in. I am impressed with the belief that the time is not far distant when we will have such a scientific arrangement of teaching as we do in the best surgical operations and that it will be just as satisfactory. I am glad this subject has come up for our consideration, not that we can settle it, but that we can have some influence in promoting a correct solution of the problem.

DR. HERMAN KNAPP, New York—Whenever a new department is added to the curriculum and the final examination of the student there is a howl, and so it has been with ophthalmoscopy. At the University of Columbia (N. Y.) there was no question asked in ophthalmology until fourteen years ago, when, after Dr. Agnew's death, I made it the condition of my acceptance of the professorship that ophthalmology should be a recognized branch in the curriculum, that the professor should be paid, that he should examine the students and give the markings in his branch at the graduation. The immediate consequence was that the same rights were accorded to the other so-called clinical professors. Now our students have didactic-demonstrative lectures in the college and clinics, in sections in the hospital, and are trained in functional examination of the eye and in the use of the ophthalmoscope, the drill-courses, in sections, are obligatory, and the student has to hand in his certificate of attendance when he presents himself for his final examination.

Dr. Burnett said "a little knowledge is a dangerous thing," but who of us can say that he knows all? Our knowledge is all relative and there is nothing of which we know enough. We have to learn what best we can and even the little we have learned is frequently very useful—of which ophthalmoscopy gives plain testimony. I do not think any retrograde movement should be encouraged. Our college course has been lengthened and probably will still more be lengthened, until the time and facilities are sufficient for the average student to acquire by scientific study and methodical training, practical knowledge to diagnose and treat all the patients that will come before him.

DR. CRUMB, Utica, N. Y.—I think it is of decided advantage for every student to have a practical training in ophthalmoscopy. It is of advantage to the physician as well as to his patients, and also to the oculist; for if a man has had any training in ophthalmoscopy he soon learns to appreciate the difficulties in being skilled in its use and it gives him more respect for those who are expert and he will not be so apt to send his cases to the optician. We have instances in our city where good members of the American Medical Association send their cases to the optician for refraction, which is certainly decidedly wrong and the younger members of the profession, who have some knowledge of ophthalmoscopy, do not do it.

DR. CARMALT, New Haven—I really think this discussion belongs to some other Section than ours. We are all well enough convinced that ophthalmology should be taught in the general course and I agree with all that has been said in regard to its importance. Certainly, any general practitioner who attempts to do anything with nervous and various constitutional diseases must use the ophthalmoscope constantly and ophthalmology should have just as important a place in the curriculum of study as surgery and medicine. It is a part of these general branches. In the Yale Medical School we have examinations, and the students must attain their marks which stand in the same relation as any of the other special branches. I think it belongs to other sections to speak of its importance. We have no doubt about it.

DR. F. W. HIGGINS, Cortland, N. Y.—There is quite a large class of specialists in our Section who think that the less the general practitioner knows of the ophthalmoscope, the better. I can only speak on the question from the point of personal experience. Like some of the others here I first learned the use of the ophthalmoscope in my own office. We were general practitioners not satisfied with the knowledge given us by our schools. Lately much good work has been done in microscopic examination of the blood, but none of us who were graduated a few years ago were instructed in the technic. If we wish to keep up with the most improved methods of diagnosis we must do so in our own offices by grinding out the subject for ourselves. That is what I did with the ophthalmoscope. I have had two assistants in my office that I had no trouble at all in teaching to use the ophthalmoscope. It is easier than teaching them to use the microscope. To begin with, the dilated pupil is the whole secret. If we do that in fifteen minutes we can teach a student to see the fundus. I think we should do a little missionary work among the general practitioners. There is no danger that they will all become oculists. It is true that many physicians do not know how to use a microscope, but it seems to me that no doctor should be satisfied who does not own and use a microscope and an ophthalmoscope.

DR. FRANK ALLPORT, Chicago—In my own teachings I have purchased some twenty-five papier-mache eyes and before my students undertake to look into the human eye they go into the dark room with a row of these eyes, each student with his own ophthalmoscope, and they work on these until they are quite capable of examining the human eye with dilated pupil.

DR. A. R. BAKER, Cleveland—About all I want to say has been said and I only add that if, as Dr. Knapp has stated, it must be a dull student, indeed, that can not see the fundus in five minutes: it is scarcely necessary to waste time on the papier-mache eyes. Because all of us do not become expert with the stethoscope is no reason why it should not be taught. It devolves upon us to educate the general practitioner in this matter. I was taught as a student that I should not attempt to learn the use of the ophthalmoscope, but that I should always send all eye cases to the specialist, and I am afraid there is a tendency to that kind of teaching to-day. We should try to get away from that idea. The subject can not be taught in large classes; the classes should be composed of from three to five, at the most. If you try to teach twenty or forty, you will always fail.

DR. F. C. TODD, Minneapolis—The discussion has turned to the teaching of ophthalmoscopy to undergraduates, and while, as I said in my paper, I believe that a certain amount of ophthalmoscopy should be taught, it is a question how much should be required. It has been stated by some who have taken part in the discussion that they require undergraduates to learn ophthalmoscopy thoroughly. Where have these students gone who have been taught ophthalmoscopy? I rarely ever see a general practitioner, even among the younger men, who knows anything about the use of the ophthalmoscope. I hope they will come along later.

It is evident from this discussion that there is a vast difference of opinion as to the things that should be taught and the methods that should be used, but evolution in teaching medicine is going on and we seem to be following the example of teachers in academic work who make a study of pedagogy. We have adopted the graded system of instruction following their example and many of the medical schools are adopting the elective system, which has been so long in use in university education. If we are to teach ophthalmoscopy thoroughly it must be made an elective, for there is not enough time to teach anything more than the rudiments in the required course.

DR. SWAN M. BURNETT, Washington—I only want to say a word more and that is to make a plea for honesty in our teaching. We claim to teach our students to use the ophthalmoscope and we do not do it. They do not, as a rule, know any more practically about it when they go out of our schools than when they come in. The proper teaching of ophthalmoscopy, I assert, can only be done under the elective system. You can not teach it in any practical way in less than six months. There is not a general practitioner that I have seen, nor a recent graduate, to whom the instrument is anything more than a toy. I simply want us to do rightly what we claim to do, or not attempt it at all.

PSYCHOLOGY OF HABIT IN SURGICAL TECHNIC.

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Medical writers agree as to the necessity for a good technic, but have been singularly silent as to how to acquire it. Too much is taken for granted. Too little study has been given to detail. No effort has been made to separate the things which are always done by habit, from those which must always be done by thought and reason. Much of this is due to a lack of understanding concerning the psychology of habit.

By far the greater part of our work is done without a thought of how it is done. Rarely can a man correctly state the moves he uses to dress himself, to cleanse his hands or to prepare a field for operation. It is much like giving a good definition for such familiar terms as "climate," "a cold," etc. Many, however, can tell exactly how to tie the latest fancy bow tie. Many can give Dr. ——'s method of sterilizing his hands; Dr. Kelly's method of catheterizing the ureter; can define karyokinesis accurately or describe fully the features of bubonic plague.

The question arises: Why do we understand difficult matters and show an utter lack of understanding of the details of simpler matters?

In the first group of examples the lessons were learned before we began to apply reasoning power to an act. At this time we acted by instinct and gradually drifted into the ways of nature. As soon as we learned an act it was turned over to the custody of our master, habit, which we may say never changes and never allows an investigation.

The cases or acts of the second group are more difficult. They come to us by hearsay; necessarily require analysis, and their infrequency or our lack of familiarity with them has prevented us from turning them over to the custody of habit. It is probable that few surgeons can recall the time when they have studiously applied their minds to the performing of every detail of a surgical operation. The fact is that we can not be positive after we have done an operation whether we have observed every point in technic, but we are willing to risk our habits to carry us through safely. We unconsciously rely on the subconscious mind to tell our objective mind if our muscles do something wrong.

DEFINITION OF HABIT.

We speak of certain acts as being nothing more than habit; but do we fully understand what we mean by the word habit? James says: "The most complex habits are nothing but concatenated discharges, due to the presence there of a system of reflex paths, so organized as to wake each other up successively, the impression produced by one muscular contraction serving as a stimulus to provoke the next, until the final impression inhibits the process and closes the chain." James further states: "In action grown habitual, which instigates each new muscular contraction to take place in its appointed order, is not a thought or a perception, but the sensation occasioned by muscular contraction just finished. A strictly voluntary action has to be guided by an idea, perception and volition through its whole course. In a habitual action mere sensation is a sufficient guide, and the upper region of the brain and mind are set comparatively free. In habitual actions the only impulse which the centers of idea or perception need send down is the initial impulse, the command to start."

He further illustrates this point by comparing the formation of habit to water, which "In flowing hollows out for itself a channel, which grows broader and deeper, and after having ceased to flow, it resumes, when it flows again, the path assumed by itself before. Just so the impressions of outer objects fashion for themselves in the nervous system more and more appropriate paths, and these vital phenomena recur, under similar excitements from without, when they have been interrupted a certain time."

The psychology of habit may be very aptly likened to a phonograph or kinetoscope, which reproduces the voice in the one case or a moving image in another thousands of times exactly alike, due to a very delicate impression or path made on a plate by a sound in the one case and an image in the other. This little path or impression is very delicate, and yet so accurate that when the little machine is set to work the exact modulations of the voice are produced in the one case and the exact movements of the body reproduced in the other.

The spinal centers controlling the muscles are even more accurate than these little machines, unless their delicate structures are marred by having conflicting impressions which blur them and produce many uncertain paths, causing the muscles under control of these centers to act in uncertain ways. The muscles under control of the spinal centers can be taught to act automatically with as much accuracy as the little instruments mentioned, if they are rigidly trained to a certain act by the thinking mind for a sufficient number of times; but if a number of methods are being taught alternately the impressions made on the centers would be like a phonographic plate which carries the impression made by two different songs or speeches.

NATURE OF HABIT.

In discussing the nature of habit Dumont says: "By habit a violin used by a master for a number of years acquires beautiful tones because the fibers of the wood at last contract habits of vibration conformed to harmonic relations."

James, in another place in illustrating the power of habit, refers to the case of Rip Van Winkle in Joseph Jefferson's play, who always excuses himself for every time he is drunk by saying, "I won't count this time." James says: "Well, he may not count it, and a kind heaven may not count it, but it is being counted none the less; down among his nerve cells and fibers, the molecules are counting it, registering and storing it up to be used against him when the next temptation comes."

RESULTS OF HABIT.

The results of habit as given by James are: "First, it simplifies the movements required to achieve a given result, and makes them more accurate and diminishes fatigue. The second result of habit is that it dimin-

ishes the constant attention with which our acts are performed."

Dr. Maudsley says: "If an action became no easier after being done several times; if the careful direction of consciousness were necessary to its accomplishment on each occasion, it is evident that the whole activity of a lifetime might be confined to one or two deeds—that no progress could take place in development. A man might be occupied all day in dressing and undressing himself; the attitude of his body would absorb all his attention and energy; the washing of his hands or the fastening of a button would be as difficult on each occasion as to the child on its first trial, and he would, furthermore, be completely exhausted by his exertions. Think of the pains necessary to teach the child to stand, of the many efforts it must make, and of the ease with which it at last stands, unconscious of any effort."

Carpenter says: "Our nervous system grows to the modes in which it has been exercised." James thinks "The hell endured hereafter, of which theology tells us, is no worse than the hell we make for ourselves in this world by habitually fashioning our characters in the wrong way." James also states: "Already at the age of 25 you see the professional mannerism settling down on the young commercial traveler, on the young counselor-at-law, and on the young doctor. You see the little lines of cleavage running through the character, the tricks of thought, the prejudices, the ways of the shop; in a word, the way in which a man can by-and-by no more escape than his coat-sleeve can suddenly fall into a new set of folds. On the whole, it is best he should not escape. It is well for the world that in the most of us by the age of 30 the character has set like plaster and will never soften again." So we see the habit is both our master and slave. It controls our most essential acts and yet performs practically all the menial services of ordinary life.

APPLICATION TO SURGICAL TECHNIC.

In applying this matter of psychology of habit to surgical technic the chief point is that neither the surgeon, his assistants nor his nurses can devote the mind to every little detail which is performed. The mind must be applied to the points of work which require judgment and the higher sense of reason; the details must be left to what is known as muscle sense, or spinal sense, or habit. If these actions are to be performed by the muscles, these muscles or spinal centers must be educated, and as they are not possessed with the power of reason they will act like the parrot—only as they are taught. Therefore, the principal point in arriving at a good surgical technic is education of the muscle sense.

If the parrot is to be taught to say prayers only it must never be left where it can hear profanity. If the muscles are to be taught correct methods in surgical technic they must never be permitted to act in an incorrect manner.

It is a very serious matter, during the course of an operation, if a nurse or an assistant, or the surgeon himself, becomes so engrossed with some difficult problem which comes up that he entirely loses himself so that instead of doing the right thing in the way of technic his muscles perform some old method learned years before which has proven disastrous on many occasions and which he has tried in vain to forget. An important point for us to consider, therefore, is the early education of our muscles, in one good way, so that when storms arise and when troubles come the chances are many to one that they will do right.

PATHS OF HABIT.

The paths of habit in the nervous system are all so delicate and so accurate that such a small point as having had our attention called away from our work while washing our hands early in our career may be the beginning of a habit which from that time on has caused us to neglect some little point of the surface of our hands. It may be only one corner of a certain finger nail, or a very small area in the space between two fingers, but we may rest assured that under ordinary circumstances we will neglect this space with as much certainty as that a seed will reproduce its kind, and this may be the cause of the fatal cases of sepsis for which you could in no way account.

I have no patience with the old excuse that "sepsis will occur without apparent cause in the practice of the very best men." When we have sepsis in a clean wound we may know some one has infected the patient. It may be the surgeon, his assistant or his nurse, but some one is at fault, and I think the primary blame must rest on the surgeon himself, for he must be responsible for the training of his assistants and nurses. This applies, not only to the cleansing of the hands, but to every point connected with surgical cases.

HOW TO ACQUIRE GOOD HABITS.

It is a fact that it is almost impossible for one to change his technic after he has operated for a number of years; if he has not already acquired a fairly good technic his patient will suffer because of his methods.

If he has acquired a good technic it is not his own acts that he fears, but the acts of his assistants and nurses. The question then is, how can he most quickly and most effectually train his nurses or students so that they will perform their duties in a correct manner at all times and under all circumstances?

I know of no rules better than a modification of the principles laid down by James. First, take care to launch your students with as strong and decided initiative as possible by teaching them the importance and value of habit, and that they must depend largely on habit for results. Second, never allow an exception to pass with impunity until the new habit is successfully rooted. After a number of months' practice in the same groove the nervous system will act infallibly right.

Almost nothing has been written in the form of a text on this subject. Nurses and doctors have each learned their particular method, not seeing any two persons with exactly the same technic. Their teachers have not seen fit to call their attention to the small details, or have not noticed all this. The consequence is that a wrong habit has been fixed. For instance, a physician has acquired the habit of washing his hands for five minutes. If you watch him you may notice that four minutes of this has been spent in rubbing the ends of his fingers to and fro along the brush, one-half minute has been spent in scrubbing the palms of the hands, one-third has been spent in making an occasional excursion over his hands, and one-twelfth of a minute has been spent in making an occasional tour over the hands and arms, while the spaces between his fingers have received very little attention. Another operator may reverse this order and devote a great deal of time to some point which has not been mentioned, but in not a single instance has he given a thought to what he is doing or whether all the points of the surface of his hands have been cleansed.

A nurse in preparing for a gynecological operation may first scrub everything from the tip of the coccyx to the pubes into one mass, and then begin by infecting

the entire field. The brush is dipped back into the pan of water and soap, is plunged into the vagina, is again brought out and scrubbed over the external genitals, again into the vagina, and so on in rotation, infecting the entire field. In consequence the field has not received the best opportunity for being cleansed and still a much longer time is required than if the work had been done in a systematic manner.

In expressing my ideas and the method of instilling habits into the nervous system of pupils I can probably do no better than to state the method I have adopted in teaching surgical technic to the nurses of the North Pacific Sanatorium.

OUR METHOD.

We have our work printed in a little pamphlet entitled "Methodical Technic." which we use as a text, in which is described every detail. Every move in performing each act has been thoroughly studied before it has been adopted. Having been adopted it is followed to the letter, and we admit no other way than "Our way" for cleansing the hands; there is no other way than "Our way" for cleansing a field for operation; there is no other way than "Our way" for performing any of the details pertaining to surgical technic, unless it be by a special order of a physician in attendance. Every act must be first learned by a direct concentration of the mind on the details under supervision of the head nurses.

As an illustration of what I mean by detail, I will give a method of cleansing the hands.

METHODICAL CLEANSING OF THE HANDS.

1. With sterilized liquid green soap and sterile brush scrub the hands from the wrists down in the following order: Begin with the thumb on the left hand and scrub the thumb thoroughly in the following order: Radial side, dorsal surface, palmar surface, radial side again, end of finger and nail, root of nail, ulnar surface of thumb, interdigital space, radial side of index finger, dorsal surface, palmar surface, radial side, end of finger and nail, root of nail, ulnar surface interdigital space, radial side of middle finger, etc. Studiously scrub under and around every portion of the nail and surface and the space between the thumb and the index finger. Scrub the index finger likewise, carefully concentrating the mind on every move of the brush and paying special attention to the interdigital space. Continue across the hand, taking in all the fingers in a similar manner. Then take the thumb on the right hand and proceed across the right hand in like manner. Now begin again and scrub the left hand as a whole, beginning on the thumb side, passing over the back around the little finger across the palm and back to the thumb. Include the wrist in this scrubbing. Then a general repetition over the entire hand in the same manner, including the nails. Then the right hand in a similar manner.

2. Put down the brush and with a sterile nail file carefully clean under and around each nail, beginning with the left thumb, and take every nail in the order given for the scrubbing.

3. Soap the arms and hands from the elbow down with sterile green soap. Take a fresh sterile brush and begin with the left arm and scrub down to the wrist. Scrub the right arm in like manner. Then begin with the thumb and scrub the hands in the manner described in the first step.

In the formation of these habits the nurses must not be allowed to begin at any other point or to proceed in any other order than in the one laid down. There is no especial virtue in beginning at this particular point, but every time the hands are scrubbed in this manner the groove is deepened and the habit thus fixed which is to become indelible.

This process of washing the hands must be done at least once a day when the nurse is off duty, in order that she may devote her mind exclusively to directing the excursion of the brush over her hands. This is much more difficult for the graduated nurses or the operator than for the pupil nurse or student.

GENERAL RULES.

The following general rules are given:

1. Avoid contact with septic material the same as if you had no water, no chemical antiseptics and no artificial protection for the hands.

2. In preparing the hands or a field for operation do your work as thoroughly as if you had handled the most virulent septic material and had no antiseptic solution or artificial protection for the hands.

3. Use chemical germicides as faithfully as if you had handled septic matter, had not had the opportunity of using soap or water and had no rubber gloves.

4. When rubber gloves are used no less precaution should be exercised than if they were not to be used.

5. After these steps have been followed out avoid contact of the supposedly sterilized articles the same as if no cleansing had been done by either of the preceding methods.

These rules are given with the understanding that there are conditions under which they can not be carried out. These exceptions are given in a general way. If these rules are constantly borne in mind you will instinctively refrain from unnecessary handling of septic material.

Having come in contact with septic material you will instinctively refrain from touching anything with your hands until you have given them a thorough cleansing. Having mechanically cleansed your hands you will instinctively feel that they are still septic until you have used an antiseptic agent. Having cleansed everything as thoroughly as possible, you will still instinctively avoid unnecessary contact.

SUMMARY.

In summing up, we may, for all practical purposes, state that habit is a channel in the nervous system formed by the performance of a voluntary act, which channel becomes deeper each time it is used, but the wall of which is weakened when a varying or conflicting method is substituted. This difference may be likened to the difference between the channel of a river which has run for thousands of years in the same channel forming a deep canyon, and a river which runs through a sandy valley and which changes its bed to suit the various circumstances and climatic changes. We may say that habit is a mossback; is self-satisfied and never changes. Habit is a part of nature herself; is always true, therefore nothing can be safely delegated to habit which is subject to change. A surgical operation can not be delegated to habit, because we rarely find two conditions exactly alike. It always requires reason. In short, everything which can be made perfect should be delegated to habit. Nothing should be delegated to habit which is untrue or varying.

In instilling a habit first decide definitely what you want to teach. Second, do not overlook or neglect a single point or take anything for granted. Third, see that every point is carried out to the letter under the direction of a close observer. Fourth, accept no other way or excuse until the habit you wish to form is a part of the nature.

THE TEACHING OF THERAPEUTICS AND PHARMACOLOGY FROM THE EXPERIMENTAL STANDPOINT.

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INTRODUCTORY.

The most conspicuous tendency in the evolution of scientific instruction has been toward the introduction of laboratory methods; toward the substitution for authoritative statement, of direct observation, independent reasoning and a spirit of criticism. This method is particularly useful in medicine; for a student of the medical sciences is never merely a student, but by the very requirements of his calling he must be trained as an independent observer and thinker. The problems which his profession places before him can rarely be settled by reference to authorities, but must be approached by methods essentially similar to those employed by the experimental investigator. The training of a medical student should therefore be along experimental lines. Nevertheless, it is scarcely too much to say that teaching on an experimental basis is still in its infancy in medical schools. Reasons for this are not far to seek: Experimental medicine is of recent growth, and its introduction into teaching has been hampered by the existing organization of the medical schools; by the large number of students in comparison with the laboratory facilities; by the meager salaries of the instructors—in a word, by insufficient endowments. These adverse conditions still persist to a great extent, but the importance of scientific medicine has come to be so generally recognized that all difficulties had to be surmounted. Even the lowest types of medical colleges pretend to offer some laboratory courses.

It is a still more encouraging sign of the times, however, that the leading medical schools base their claims to leadership, not on the number of their students, but on the excellence of their laboratory instruction, including in this term the teaching of clinical subjects on a similar plan. Colleges less fortunate in their facilities are following this lead to the full extent of their resources. As a result of this tendency, medical teachers are being called on to organize new methods of instruction in an ever-increasing range of subjects. In this reorganization the instructor is at present thrown largely on his own resources, and his previous experience is of but limited applicability. He must practically start anew and learn by his mistakes. The waste along every line, which is inseparable from this method, could be greatly diminished if the beginning instructor could have access to the experience of others who have organized similar courses. It would therefore seem desirable that the instructors of such branches in a number of representative schools should publish in sufficient detail the organization and methods which have proved most successful in their experience. These outlines would supply valuable hints to schools in which new courses are in process of organization. They would serve to bring to the attention of even experienced instructors valuable features in the methods of their colleagues. They would have a tendency to foster uniform standards of instruction and requirements. Nor would such papers be without interest to the profession at large, for it may safely be affirmed that every practitioner is, or should be, interested in the advance of medical instruction.

That the desirability of such descriptions of new methods of teaching is being generally recognized is shown by the appearance, within recent years, of several monographs.[1] This recognition has encouraged me to present an outline of the course of pharmacology in actual operation in the institution with which I am connected.

PHARMACOLOGY A LABORATORY SUBJECT.

Therapeutics, or pharmacology, is peculiarly a laboratory subject. No branch of medical knowledge is more susceptible of experimental demonstration; none demands so imperatively an appeal to experimental methods and reasoning for its proper understanding. This view of therapeutics led me to the organization of a course which gives great prominence to experimental facts and principles. In substituting this experimental course for the older didactic method, the transition need not be abrupt. Demonstrations may at first take the place of the laboratory work, or the latter may be made elective. Indeed, the real essential is that the instructor cause the student to look on the subject as one capable of being treated by actual observation, experiment and independent thought. Laboratory work is, of course, a most potent means to this end. The instructor in a large subject like pharmacology must have a clear and definite idea of what he wishes to accomplish and of what he considers essential for the student to acquire. These aims he must take pains to keep constantly before the class. The course outlined by me is intended to furnish the student with an accurate knowledge and understanding of those facts about drugs which presumably will be useful to him in practice; to teach the effects as much as possible by direct observation; to foster a critical, inquiring, scientific spirit, independent thought and observation, and finally to give an introduction into the elements of research. To accomplish these objects the teacher does not teach in the ordinary sense—that is, didactically—but contents himself with encouraging, outlining, guiding, correcting, explaining, etc., the independent inquiries of the student, and in ascertaining that the work is done in a proper manner, and that the results come up to the set requirements.

GENERAL PLAN OF INSTRUCTION—REQUIRED WORK.

Lectures.—These are intended to give the student a general idea of the theme to be studied; to explain how to study this theme; to bring out the relative importance of particular facts or theories; to elucidate obscure or difficult points; to introduce the latest discoveries, and, finally, to give the teacher an opportunity to infuse into his subject and teaching the personal enthusiasm, interest, life and color, which can, after all, be given in no way as well as by oral lectures.

The lecture will naturally divide itself into three parts: 1, Outline of the subject; 2, elucidation of difficult points, and 3, new discoveries. To cover these subjects the lectures need not be exhaustive, since the student is expected to do his studying from his text-books. One lecture to three or four recitations suffices as a rule. The lectures should, if possible, be preceded by whatever elaborate demonstration is necessary. Simple experiments, diagrams, etc., are introduced directly into the lectures. The latter should be sufficiently short to hold the full interest of the students and teacher. Forty-five minutes are usually ample. During the fifteen minutes following the lecture the lecturer will answer informally individual questions by the students. The latter may also utilize this time to examine the materia medica

1. "On the Teaching of Pharmacology, etc." John J. Abel, Philadelphia Medical Journal, Sept. 1, 1890. "Some Forms of Apparatus, etc." E. T. Reichert, Univ. of Pennsylvania Medical Bulletin, June, 1901. "Physiology at Harvard," William T. Porter, Boston.

specimens. The lectures are particularly a function of the head of the department. Attendance should not be obligatory.

Recitations.—These are intended to accomplish the following: For the student they furnish a definite plan of study; help in fixing facts in the memory; bring out important points; teach him to keep his knowledge accessible; correct erroneous impressions; help to explain obscure points in the text and give opportunity to ask questions and to present his own views. To the teacher they give opportunity to develop the details of the subject systematically; to correct omissions in lectures; to bring out the way the subject should be studied; to judge the progress of the class and the individuals; and for deductive explanations.

To accomplish these objects the teacher, with the book before him, asks questions, in a systematic order, so as to cover the subject with fair completeness. The questions should be of such a nature as to bring out the knowledge of the student and to ascertain how thoroughly he understands and has mastered the facts. They should have a scope sufficiently wide to permit the student to develop the subject himself, the teacher interposing minor questions to give the recitation more of the nature of a discussion than of a recitation by rote. If a student blunder, another should, if possible, be made to give the right answer. The questions should never be leading; misleading questions are permissible. The teacher should return to the student, until he has convinced himself of the knowledge of the latter, and should then give him a grade—preferably on the basis of ten.

For these recitations a certain number of pages of the text-book—from 8 to 15—should be assigned, the aim being to give a rounded-off subject. This should have been previously covered by lectures and demonstrations; but for certain subjects, or when time presses, recitations alone may suffice. It is recommended that the class have a uniform text-book, which should be in harmony with the general spirit of the course. I have elaborated a volume for this special purpose.[2] Collateral reading is also encouraged. The recitation may occupy the full hour, and may be given either by the head of the department or by assistants, according to the importance and intricacy of the subject. Attendance should be compulsory on three-fourths of the recitations, unless special excuses are accepted.

Demonstrations.—As many as possible of the important facts which are not covered in the laboratory work, should be verified by demonstrations. Simple experiments which consume only little time may well be worked into the lecture; longer experiments are given in a separate hour. The demonstrations should be so made as to be also lessons in technic and in observation. They should be accompanied by suitable remarks, which may be more empiric than in the lectures or recitations. Questions by the students should be encouraged. The demonstrations should be so arranged that they may be witnessed in detail by all members of the class. The latter must, if necessary, be divided into sections. A demonstration should not, as a rule, last over one hour, and, if possible, not more than forty-five minutes. The demonstrations may be given by the head of the department or assistants; or by advanced students under the direct supervision of the former. Attendance on three-fourths of the demonstrations should be compulsory, unless special excuses are accepted.

2. T. Sollmann: "A Text-Book of Pharmacology." W. B. Saunders & Co.

Laboratory Work.—The student, before beginning his pharmacologic work, should have mastered the technic of physiologic experimentation. The main object being to obtain results on the action of drugs, the preparation of the material for the experiments should be done by the staff as much as possible, the student thus having left more time and energy for the main object. If the students have not had sufficient preliminary training the experiments as given must be shortened and the course correspondingly extended. As the action of drugs always shows sufficient variation to leave a large scope to individual observation, it is better that the student should know what phenomena to expect, so as to seize the main results. Experiments can be carried out most successfully, and observations made most fully and accurately, when 6 men work on a mammal or 3 on a frog. The different manipulations and classes of observations should be made to alternate between the different members of the section, under the direction of the instructor. The latter should supervise not more than 18 men; and not more than 50 men should work in any room at one time. Chemical experiments should be made individually by each man, and one instructor will suffice for twice the above number.

Every subject covered in the laboratory should be preceded by a special "laboratory talk." This should take up the results to be expected; the deductions to be drawn from them; the points on which the observations should especially be made to bear; the explanation and demonstration of technic, etc. These talks are given whenever occasion demands, and may cover several laboratory exercises. For subjects not yet covered in lectures, the talk should be by the teacher, otherwise it may take more of the form of a quiz.

During the laboratory exercise itself the instructor should confine himself to seeing that the work is properly done, and to giving indispensable help. The students should be encouraged to rely on their own resources, and their attention should not be distracted by quizzing. When some result of unusual interest is obtained by one of the sections the instructor may call the other men to witness it and he may give a brief extempore talk.

Unnecessary conversation, laughing, whistling and loud talking should not be tolerated. Each student must clean his working place before leaving the laboratory. If the apparatus permit, the entire class or section should work on not more than two experiments at the same time. This concentrates the attention of both students and instructor. On the other hand, the instructor should not allow a new experiment to be performed until all previous ones have been finished in a satisfactory manner. For this reason one day in four in the chemical work and one day in three in animal work should be left free for the repetition of faulty experiments. Those students who are not required to repeat experiments may elect to do additional experiments on these days.

With large sections it will be found better to have one-half of the section doing frog work, the other half mammal work. This requires less apparatus and gives some elasticity to accommodate an often fluctuating supply of mammals. The two halves alternate on successive days.

Laboratory Records.—Each section must keep detailed records of the results of the experiments in blank books furnished by the laboratory. The blanks for vivisec-

tions have printed headings.[3] Each report must be signed by the student reporting. At the end of the laboratory course these books must be provided with an index, as for example: "Strychnin: Exp. 2, page 1; Exp. 4, page 8; Exp. 5, page 10," etc. The books and tracings are then handed in, graded and retained on file in the laboratory. Students may copy whatever they wish from these records and tracings may often be returned on application to the instructor.

At intervals a laboratory discussion is given. This is made to cover the two or three preceding experiments, questions being asked by the instructor to bring out the results, which are then discussed by the class. This discussion should be conducted by the head of the department. The remainder of the laboratory work may be given by assistants under the supervision of the head of the department. Three to four hours should be allowed for each vivisection experiment, two hours for frog experiments and one to three hours for the chemical experiments. Attendance on four-fifths of the actual laboratory work should be compulsory and insured by roll-call.

Materia Medica.—This subject is taught in direct connection with pharmacology, the idea being to familiarize the student with the preparations in which the drugs may be prescribed; their dose, miscibility, general appearance and physical characters. On account of the very great number of practically obsolete drugs and preparations, this requires careful selection.

A rather extensive collection of materia medica comprising organic and inorganic drugs, their preparations, active principles, etc., is kept easily accessible in glass cases. They are arranged by the groups used in the teaching. Each bottle, in addition to the name of the contents, bears one of the following labels: "Strong Poison, Do Not Taste," printed on red paper; "Poison, Taste Cautiously," printed on blue paper, or "Practically Harmless," printed on green paper. Also one of the following white labels with the imprint, "Identification." in red letters, "Important" in blue letters, or "Unimportant" in black letters. The "Identification" bottles contain the specimens which the student must be prepared to identify. They are always placed toward the right hand of the shelves. The bottles are numbered consecutively and by shelves and cases, there being a card index to the collection. A single key fits all the cases, and will be lent to any student on application. There is also an herbarium and a collection of water-color illustrations of important plants.

These collections are utilized as follows: They are brought out and placed on the lecture table during the preliminary lecture on the group, the lecturer calling attention to the characters of the more important specimens. They are examined by the students during the quarter hour following the lecture. They are then exposed on a side table in the lecture room for one week. The "Identification" specimens are then placed on a conspicuous shelf in the lecture room, easily accessible to the students, and left there until the end of the course. During the recitation a few specimens considered in the preceding lecture are passed around for identification. The "important" and "unimportant" specimens are returned to the museum at the expiration of the week. The students are directed to study the specimens in such a way that they will be able to name the "Identification" drugs from the unlabeled specimens; with the "Important" they should be able to say whether or not an unlabeled specimen could be, for instance, arsenious acid; while the "Unimportant" need merely be glanced over.

Prescription Writing.—The systematic study of this subject comes in the early part of the course in the sophomore year. After a quiz on the book, five hours of exercises and five lessons for home-work are given at convenient times, to illustrate the construction of prescriptions and the manner of prescribing different classes of preparations—such as liquids, pills, ointments, etc. For this purpose four men are called to the blackboard; the instructor gives out two prescriptions, in the briefest shape possible, one to each alternate student. These the students write out; they are then criticised by the class and the instructor; and four other students are called up, etc. Prescriptions are similarly assigned for home-work, and are graded and returned by the instructor.

In the junior year five hours and five home lessons are distributed through the year, the exercises being conducted in a similar manner. In these drills the application of a given group of drugs, or the treatment of a given condition of disease, is given out, the students being required to fill in the necessary details according to their judgment.

Incompatibilities.—The most important incompatibilities are brought out in the laboratory work or shown in a demonstration. They are then recited on in three hours. Incompatible prescriptions are placed on the blackboard about ten times at intervals during the course; these are criticised by the students, the rule according to which they occur being every time quoted in full. A similar course is followed when incompatibilities occur in prescription writing.

OPTIONAL WORK.

The following courses of conferences, theses and research are designed to foster original thought and investigation by the students. An hour a week for eighteen weeks is given to the discussions; conferences alternating with theses. The program is announced in advance. Experimental research is specially arranged for.

Participation in these courses is purely voluntary, but they deserve the active support of the students on account of their importance and in return for the sacrifice of time and labor on the part of the instructor.

Conferences.—These comprise three heterogeneous features: The question box, reading of abstracts and compilation of reports.

The Question Box.—This feature is designed to open for discussion questions which are of especial interest to the class, outside of the order treated in the lectures. A box is kept in the lecture room into which students may place questions, signed with the name of the enquirer. These questions are answered at the discretion of the instructor in the conferences within two weeks. Any question relating to pharmacology will be considered pertinent. The answer may, however, take the form of a reference to the place where further details may be sought.

Abstracts and Criticism of Original Papers.—Even the most advanced text-books give an inadequate idea of the spirit of an advancing science. This can only be obtained by research and the perusal of original papers. The latter has the further advantage of familiarizing

3. The table is headed: Date —; Section —; Reporter —; Experiment Number —; Animal —; Age —; Sex —; Anesthetic —; Then follow columns for recording the following: Time; Drug; Dose pr. Kg.; Strength of Solution; Manner of Injection; Heart: Rate, Regularity, Tracing and Strength; Respiration: Rate, Strength, Tracing; Blood Pressure: Mean Height, Extremes, Respiration Variations, Tracing; Urine, Flow; Venous Pressure; Intestine: Color, Peristalsis.

the student with the methods of keeping up with the progress of medical science.

To secure this object the students who are willing to participate in this feature of the course are requested to hand in cards bearing their names and a list of the languages which they can read. The instructor selects a number of names and gives to each an original paper,[4] which is to be abstracted and returned within two weeks. The abstracts should be from about 100 to 500 words, and should consist of a table of the contents of the paper, an outline of the method adopted, and the conclusions, with criticisms and suggestions for further research. The abstract should be, as far as possible, in the student's own words. The abstracts are handed in to the instructor and criticised by him. When the student wishes to be assigned another paper he again places his name in the box. From these abstracts the instructor will select a certain number to be read before the class in the conference hour. These will then be subjected to criticism by the class and instructor, as regards the paper, the subject and the abstract itself.

Compilation of Reports.—The drafting of conclusions from the facts furnished by a considerable number of experiments possesses great importance—not only in experimental research, but also in clinical observation. As a practice in this class of work the reports on experiments on file in the laboratory, as well as the tracings relating to them, will be given out to volunteers. The instructor will outline the manner in which the compilation is to be made. The student will then draw the conclusions justified by the experiment, and submit them to the instructor. At the discretion of the latter these will be read and criticised in the conference. The work must be handed in within two weeks. The general treatment is to abstract the important points from each report, and from these results to present a picture of the action of the drug under the condition of the experiment.

The compilation may bear either on a given experiment—say Exp. 2, Mammals; or more usefully on a single drug, or one of the phases of its action, such as the action of strychnin on the circulation and respiration; the action of drugs on the eye, etc. The effects should be noted, qualitatively and quantitatively, for different doses and time of action. The results should be presented both by "means" and averages. Important representative tracings should form part of the report. General conclusions should be drawn as far as the data permit. Special attention should be given to atypical and unusual results. If the student desire, he may make this compilation the basis of a thesis by enlarging on the general bearing of the results, comparing them with the statements of text-books and investigators, etc.

Reading and Discussion of Theses.—This feature is intended to give the students practice in writing, reading and discussion of papers. The students who wish to participate in this course are requested to hand in their names to the instructor. A week before the meeting three names are chosen by lot from these cards. The first drawn (A) will preside during the meeting—the first two or three meetings, however, being conducted by the head of the department. The other two (B and C) will lead the discussion. All three will be expected to familiarize themselves with the subject and to prepare beforehand a list of topics for discussion. The function of the instructor during these meetings will be merely that of advisor to the chairman and of final critic.

The value of the course will depend largely on the discussion following the paper. It is the duty of the chairman to see that this discussion is generally participated in. He also passes on the topics for discussion and places a list of them on the blackboard. Questions of fact are referred by him to the reader, or to the men leading the discussion. The chairman is at liberty to devise his own program. The following is submitted for his guidance:

1. Reading of paper.
2. Suggestion of topics by reader, B, C, class, A, instructor. Of these the chairman will make a selection and write these on the blackboard in the order in which he wishes them discussed.
3. Question of facts and observation, B, C, class, A, reader, instructor.
4. Statement of views and theories, with reasons for same (order as in 3).
5. Discussion of views and theories (order as in 3).
6. Summary by the instructor.

In case the reading and discussion of a thesis occupies more than one meeting the chairman will be retained until it is disposed of.

The Theses.—The papers should aim to give either an original presentation of a subject, or a critical compilation of the literature, or to bring out and discuss obscure and disputed questions concerning the theme. The themes of theses may be any subjects connected with pharmacology, as any pharmacologic group, such as antipyretics, atropin, local anesthetics, etc.; or the pharmacologic treatment of any disease or condition, as, for instance, pneumonia, pain, etc.; or the treatment of cases under the writer's observation; or summarized reports of experiments or research; or historical or bibliographical.

The titles of the theses read in 1902 will give some idea of the scope of this course:

Hot, Cold and Vapor Baths; Their Clinical Effect.
Medullary Stimulants.
The Food Value of Alcohol.
Cocain, Historical Survey of Research on.
Cocain, Collection of the Laboratory Experiments on Frogs.
Caffein, Pharmacologic Summary.
Picrotoxin, Effects on the Frog.
Fish-poisons.

The writing of theses is entirely optional and the choice of the subject is also left to the student. They will be read in the order in which they are received, the program always being announced a week in advance. It is well for the instructor to suggest at first some topics from which selections may be made. In writing theses the aim should be conciseness combined with clearness. All interesting matter pertaining to the subject should be presented, but the topic should be sufficiently restricted so that the reading of the paper should not extend over 15 minutes—5 to 10 pages quarto. Only one side of the paper should be written on, and a wide margin should be left for notes. The reader will also make a brief report of the discussion and append this to his paper. The theses are kept in the files of the laboratory. The reading of the paper should be done slowly, emphasis being laid on important points. The mere reading of figures, etc., should be avoided. When figures, curves, etc., occur in the paper these should be placed on the blackboard before the meeting. A talk from notes may take the place of a regular thesis if preferred by the student.

4. The following journals will be found most useful in this connection: Am. Jour. of Physiology (Boston); Journ. of Experimental Medicine (Baltimore); Journ. of Medical Research (Boston); Journal of Physiology (Cambridge, England); Archiv f. Experim. Path. und Pharmakol. (Strassburg); Archives International de Pharmacodynamie (Paris).

Experimental Research.—Research by the students is encouraged in every way possible. All the resources of the laboratory and the advise and aid of the research staff are placed at the disposal of those willing and able to do research, without cost, except for animals or unusual apparatus or material.

Research work is divided into the following classes: 1. Assistance to the research staff. 2. Verification of a published research. 3. Joint research with a member of the research staff. 4. Independent research of subjects selected by the student or suggested by the instructor, under the supervision of the latter.

Students or others who volunteer will be assigned to one or the other of these classes at the discretion of the instructor according to their ability, previous experience or other conditions.

REVIEWS, TESTS, EXAMINATIONS AND GRADING.

Reviews.—The reviews are intended to cause the student to review the subjects covered, in order to impress them collectively and in their relation. They also aid, of course, in remembering and in preparing for tests. They are given as quizzes, the main or representative facts being brought out by rapid questioning. No grades are given. The reviews follow closely on the conclusion of the corresponding chapters and are announced three weeks in advance. They cover:

1.	Sollmann's Pharmacology,	Chapters	1 to 6	inclusive.
2.	"	"	"	28 to 32	"
3.	"	"	"	7 to 16	"
4.	"	"	"	17 to 23	"
5.	"	"	"	24 to 27	"

Just preceding the final examination these review quizzes are repeated.

Written Tests.—These are given to control the progress of the students and to train them in the writing of papers. The papers are graded by the instructor or assistants and returned to the students; the grades in recitation, etc., to date are also noted on the papers. The instructors will positively not discuss these grades with the students. All possible care is used to make the grading just and exact, and it would consume altogether too much of the instructor's time to justify and argue his decision with each student.

The questions in these tests are such as would be given in regular examinations. Each question counts an equal number of points. Each test includes about three questions and five specimens, and one hour is allowed for the answering. The tests cover the same subjects as the reviews and follow the reviews in about two weeks.

Final Examinations.—The examinations are written, oral and practical. All are intended and arranged so as to give a real conception of the knowledge of the student, rather than make him conform to any arbitrary standard; this is the cause of the division into the three above captions. The final examination covers the entire subject. The written and oral examinations are given in the first and last week of the school year.

The Written Examination.—A list of questions, of which the following is an example, is submitted to the students. The questions should be as general as possible.

1. Write a prescription for a diuretic mixture containing (a) a drug stimulating the renal cells; (b) one acting as a salt or alkali; (c) as an organic irritant; (d) as a cardiac tonic; (e) flavor, vehicle, etc. Write the names without abbreviations, and give the quantities in both metric and apothecaries' systems.

2. Describe the different ways in which antipyretics may act, and the ways of differentiating between these. Give examples.

3. Discuss the theoretical basis of the action of potassium iodid.

4. Name one or more drugs which may be employed to secure: (a) stimulation of the arterial muscle; (b) paralysis of arterial muscle; (c) paralysis of vagus ganglia; (d) stimulation of vagus center; (e) stimulation of cerebral cortex.

5. Name six of the most important emetics, stating dose for adults (metric system).

6. Discuss fully the pharmacology, symptoms, antidote, and therapeutics of one of the following drugs: Aconite, acids, mercury.

7. Identify the 20 specimens submitted, giving correct Latin name, and the dose.

8. Explain the incompatibilities in the three prescriptions submitted to you (7 and 8 are graded separately).

The questions are to be answered in writing as exhaustively as the time (three hours) will permit. Nothing is taken for granted which is not unequivocally stated in the paper. Every point covered by the questions should be fully treated in the answer; but nothing should be stated in the paper which is not directly asked for in the questions. Some attention should also be given to style. It is suggested that in writing out the answers the student should dismiss at first whatever points he does not feel certain of, and should fill these in only after he has answered those questions which he knows more fully.

Oral Examination.—Each student is examined for ten to thirty minutes, or until the examiner is convinced that he has the range of the student's knowledge. It is the object of the examiner to conduct this quiz in such a way as not to confuse the student; in case a wrong answer is given the instructor will attempt to find out whether this is the result of confusion or ignorance.

Supplementary Examination.—If the attendance on recitations has not been satisfactory the student will be required to take a supplementary examination of a somewhat more severe grade than the regular examination. If the grades of the class work, oral and written examination are conspicuously at variance, the student will be cited to furnish an explanation of the discrepancy, and may be subjected to a supplementary examination. This may be written or oral, at the discretion of the instructor.

Laboratory Examinations.—These immediately follow the conclusion of the chemical and animal laboratory work. Only students whose laboratory attendance has been satisfactory will be admitted. The object of these examinations is to judge the ability of the student to do laboratory work. To arrive at this he is obliged to work out independently certain problems which are to some extent elective; the use of books is permitted, and the instructor will give whatever aid he considers indispensable. At the conclusion of the laboratory work a list of five to twenty problems is posted. These involve principles similar to, but not identical with, those of the regular experiments. Within a week each student must make a choice of three of these problems, one of which will then be assigned to him for solution. Small sections will begin their work each week, under the personal supervision of the staff. The problems will be so arranged as to require from five to twenty hours of work, and the results must be presented in the form of a thesis. Students may elect to take regular research work in place of the laboratory examination. The grading will take account of the difficulty of the problem, the time required, the method pursued, technic, the results and the thesis.

The following list of questions from the examination

in chemical laboratory work of the past year will give an idea of the scope of these examinations:

a. Investigation of the incompatibilities of certain substances, mainly alkaloids or new synthetic compounds.
b. Isolation of a given constituent from a drug.
c. Effect of pepsin on ferments.
d. Effects of antiseptics on ferments.
e. Effects of antiseptics on bacteria.
f. Laking agents.
g. Chemical assay of a vegetable drug.
h. Testing drugs for purity.
i. Investigation into the chemical reactions of synthetic substances.
k. Making a line of pharmaceutical preparations.
l. Making a toxicologic analysis.
m. Investigating microchemical reactions.
n. Methods of estimating the amount of digestion.
o. Isolation of poisons from urine.
p. Determination of lethal doses on frogs.

Grading.—In determining the final grade of the student a system should be used which is sufficiently rigid to secure a uniformity of standard, and yet sufficiently elastic to allow for the personal judgment of the instructor as to the student's qualifications. It should take account both of the quality of the class work throughout the year and of the final knowledge as shown by the examination. I have elaborated the following scheme, which seems to me to secure these objects as well as can be and which I have applied with satisfaction:

a. All the grades of the student are carefully looked over, and a grade assigned to him without any mathematical computation, from judgment and from personal knowledge alone.

b. 1. The grades of the recitations and tests are averaged, and calculated on a basis of twenty-five. 2. The grades of the daily laboratory work, laboratory examinations, prescription writing, and examination questions of identification of specimens and incompatibilities are averaged, and calculated on a basis of twenty-five. 3. The grades of the written and oral examinations are averaged and calculated on a basis of fifty. The sum of these gives the calculated grade.

c. (*a*) and (*b*) are compared: If they approach within five points, as is almost invariably the case, the average is taken. If a larger discrepancy exists, the cause of this is inquired into and the grade adjusted accordingly. The student then may, if necessary, be required to take the supplementary examination.

The following two examples, taken from the record of the last class, will illustrate:

	Student X.	Average on basis of 100.	Student Y.	Average on basis of 100.
Grades on a recitation basis of 10.	6, 8, 10, 9½, 9, 10, 10, 10.	91	8, 8, 4, 8, 8, 7, 5	69
Tests on basis of 100.	66, 94	80	62	62
Daily laboratory work		95		87
Laboratory exam.		95		90
Prescription writing on basis of 10.	9, 10, 8, 10, 10, 10, 9, 9½	95	9, 9, 8, 7, 8, 9, 6	80
Identification exam.		75		90
Incompatibilities examination.		90		60
Written examination		99		34
Oral examination		92		65

Following the plans given above, there results:

	Student X.	Average on basis of 100.	Student Y.	Average on basis of 100.
Adjudged (by Plan *a*)		95		63
Figured (by Plan *b*)		92		61½
Accepted as real final grade		94		62

ORGANIZATION OF THE PHARMACOLOGIC LABORATORY.

The object and general methods of the laboratory course have already been sufficiently outlined. The textbook gives a series of finished experiments, but these may be enlarged or modified at the direction of the instructor, the book furnishing sufficient hints for this purpose. In this connection it may be said that, if time and material permit, it might be preferable to cut down the length of experiments and give a larger number. The best way, however, to accomplish this is to let the students work on an experiment, and if this does not come to satisfactory conclusions, to let them begin next day where they left off. When dogs are difficult to obtain, experiments on rabbits may be used for all but blood-pressure work. Cats answer well for all experiments.

Arrangement of Sections.—The students are divided into sections; six for mammals, three for frogs. These sections the men are asked to organize for themselves; those who have not joined a section when laboratory work begins will be assigned to one by lot. Every student is considered responsible for the results of the entire experiment, although a definite part is assigned to him particularly. When his own part does not demand his entire attention he is expected to give aid to the other members of the section. The student in charge of the section is to attend to this and to give directions, decide on methods, etc. He should also bring with him a list of the reagents and apparatus required for the experiment, so that there may be no delay in getting these out. The members of each section are lettered A, B, C, D, E and F. To secure a proper rotation of the work this is divided and exchanged as follows:

FROG WORK.

Place 1.—In charge of entire experiment; in especial charge of experiments on eyes, and of electrical apparatus.

Place 2.—In charge of drum and tracings, and of experiments on heart and muscle, and of cleaning.

Place 3.—In charge of report, of operations, and of experiments on heart and muscle.

A and D, B and E, C and F always have the same place; in the first experiment A and D have Place 1, etc.; in the second experiment A and D have Place 2, C and F Place 1, etc.

MAMMAL WORK.

Place 1. In charge of the entire experiment; preparation of report; observation of general condition of animal.

Place 2.—Taking of notes; giving of anesthetic; general aid in operations; respiration tracings.

Place 3.—Operations and attachment of apparatus in neck; making of injections; observations on heart; pulse and respiration.

Place 4.—Operations and attachment of apparatus to thorax; blood-pressure tracings.

Place 5.—Operations and attachment of apparatus to abdomen; observations on abdomen or vein manometer; cardiac tracings.

Place 6.—Calculation of doses and preparation of solutions; artificial respiration; subsidiary experiments; cleaning.

A will have Place 1 with the first experiment. Place 2 with the second, etc.

Equipment.—The laboratory should be supplied with chemical work tables and sinks; a fume chamber; large water bath for 40 and 100 degrees C.; dog and rabbit boards; analytical balance; scales weighting 0.01 gm. to 20 gm.; 1 gm. to 3000 gm. and 100 gm. to 50 kg.; large bottle with siphon for normal salt solution 0.75 and 0.9 per cent.; large bottle of anesthetic; jar for distilled water; jars for waste; bone shears; bellows (14x20 inches); operating instruments for instructor; tables, etc. The cost of this common apparatus, outside of tables and the analytical balance, need not exceed $50.

The tables are solidly constructed of pine and receive two coats of boiled oil. They are 36 inches high; the tops are of 1¼-inch board and project 2½ inches beyond the legs. Each section should have two tables—one 36x36 inches for apparatus, and one 20x60 inches for animals. The head-fasteners and screw-eyes for securing the animals may be attached directly to the latter table, thus doing away with separate dog-boards. The apparatus tables may also have the manometers permanently fixed to them.

Students' Equipment.—Chemical Work.—Two men are assigned to each locker, and each man is furnished with a key. The lockers contain the material enumerated below. If the laboratory does not possess a sufficient number of a given apparatus, this may be kept out and assigned on requisition. The same holds true of animal experiments. Additional apparatus may also be obtained on requisition. All charges are made against the locker. Before being assigned to a locker each student must make a deposit of $2.

CONTENTS OF CHEMICAL LOCKERS, FOR TWO MEN.

Article.	Cost per Piece.	Cost per Set.[5]
1 Bunsen burner and tube	$0.40	$0.40
2 rings	.35	.70
1 wash-bottle, 1 L	.75	.75
2 evaporating dishes, 10 cm.	.30	.60
2 funnels, 6 cm.	.10	.20
2 beakers, 25 to 100 c.c.	.17	.34
2 flasks, 250 c.c.	.18	.36
2 tumblers	.05	.10
50 test-tubes	.03	1.50
2 test-tube racks	.30	.60
2 test-tube brushes	.05	.10
1 sponge	.05	.05
1 earthen jar	.10	.10
2 exercise books	.25	.50
1 test-tube clamp	.05	.05
1 mortar, 7.5 cm.	.40	.40
1 pill tile, 12x12 cm.	.40	.40
1 spatula, 10 cm. blade	.25	.25
1 pill box	—	—
1 powder box	—	—
1 graduate, 25 c.c., conical	.35	.35
1 tripod	.25	.25
1 iron waterbath and tripod, 13 cm.	1.60	1.60
1 thermometer, 0-100 degrees C.	1.00	1.00
1 separator, 250 c.c.	1.50	1.50
1 spectroscope	6.00	6.00
2 watch-glasses, 1½ inch.	.05	.10
1 towel	.10	.10

The cost of a complete chemical equipment for two men therefore amounts to not more than $19, and by having the more expensive apparatus in common it may be reduced to $10.

Animal work.—Six men are assigned to each locker, the key of which is kept by the instructor and given out by him on application from a member of the set.

CONTENTS OF ANIMAL LOCKERS.[6]

The letters after the name of the article refer to the source whence they may be obtained.[7]

Article.	Cost per Piece.	Cost per Set.
2 drums (*a*)	$12.00	$24.00
2 induction coils (*a*)	5.00	10.00
2 electrodes (*a*)	—	—
2 contact keys (*a*)	1.00	2.00
3 dry batteries (*d*)	.25	.75
1 bichromate battery (*d*)	1.25	1.25
Insulated wires; 8 coarse and 4 fine	—	—
1 spool thread	$0.05	$0.05
1 spool silk	.05	.05
2 aneurism needles (*d*)	.35	.70
2 frog needles (*c*)	—	—
2 pithing needles	—	—
2 muscle-levers (*a*)	1.05	2.10
2 heart-holders	.75	1.50
1 cork of pins	—	—
6 cork boards	—	—
2 boards for frog circulation	—	—
2 beakers, 50 and 100 c.c. (*b*)	.15	.30
1 funnel, 6 cm. (*b*)	.10	.10
3 tumblers	.05	.15
1 earthern jar	.10	.10
Reeds and straws	—	—
1 gag	—	—
2 sponges	.05	.10
3 towels	.10	.30
2 porcelain capsules, 10 cm. (*b*)	.30	.60
1½ gal. tin bucket, with hook	.10	.10
2 10 gm. weights (*c*)	—	—
1 250 c.c. flask (*b*)	.18	.18
1 stomach catheter (*d*)	.25	.25
50 cm. glass syringe (*b*)	.20	.20
4 bull-dog forceps (*d*)	.35	1.40
1 aspirator syringe	1.00	1.00
Large and small aspirator needle (*d*)	.20	.40
1 thermometer 1-100 degrees C. (*b*)	1.00	1.00
1 clinical thermometer (*d*)	.60	.60
1 respiration bottle (*c*)	—	—
2 rods for lever respiration (*c*)	—	—
2 retort standard 1/15 in-1/20 in. (*b*)	.45-.65	1.10
3 clamp fasteners (*b*)	.25	.75
2 burette clamps (*b*)	.75	1.50
1 ring (*b*)	.35	.35
2 Bunsen burners with tubes (*b*)	.40	.80
1 tambour (*a*)	1.00	1.00
1 suture needle (*d*)	.10	.10
1 mercury manometer (*a*)	1.00	1.00
1 water manometer (*c*)	—	—
3 pipettes (*c*)	—	—
2 feathers	—	—
2 frog-report books	—	—
1 mammal-report book	—	—
Set of ligatures, heavy cotton	—	—
Set of 6 blood canulæ (*c*)	.10	.60
Set of 3 tracheal canulæ (*c*)	.10	.60
Set of 3 urethral canulæ (*c*)	.10	.30
1 bladder canula	.15	.15
1 frog's aortic canula (*a*)	.10	.10
1 T-piece, large (*b*)	.25	—
1 Y-piece small (*b*)	.25	—
1 Y-piece large (*b*)	.25	.75
Rubber tubing, 3 oz. (*b*)	.20	.60
10 test-tubes (*b*)	.03	.30
1 test-tube rack (*b*)	.30	.30
2 Mohr's clamps (*b*)	.15	.30
2 valves for William's apparatus (*b*)	.35	.70
1 screw clamp (*b*)	.30	.30
2 wire bull-dogs (*b*)	.15	.30
1 Woulf's bottle, 2 necks, 250 c.c. (*b*)	.45	.45
1 bell jar, narrow, open neck 1 L (*b*)	.45	.45
1 fine forceps (*d*)	.50	.50
1 tripod and gauze (*b*)	.25	.25
1 25 c.c. measure (*b*)	.35	.35
1 test-tube brush (*b*)	.05	.05
1 curved iron clamp (*a*)	.15	.15
Sealing wax	—	—
Parchment	—	—
1 heavy weight for mammalian heart	—	—
1 small drawer for transporting	—	—
1 box labels	—	—
1 set dog ropes (*c*)	—	—
1 set rabbit ropes (*c*)	—	—
2 binding screws	.05	.10
1 injection burette	1.40	1.40
1 mortar and pestle, 7.5 cm.	.40	.40
1 glass rod	—	—

It is requested that these pieces be kept in their proper drawers. A tool-chest will answer very nicely. The cost

5. The prices are those quoted by a large firm dealing in such supplies and are those charged to students. When chemical apparatus is imported duty free, the cost of the college course will be considerably less.

6. Very excellent and low-priced physiologic apparatus is manufactured under the supervision of the Harvard Medical School, and may be obtained through Prof. William T. Porter, Boston.

7. *a.* Harvard, see note 6, above. *b.* Chemical Supply Houses. *c.* Home-made. *d.* Surgical Instrument Stores.

of the apparatus for a set of six students will not exceed $65.

Animals.—The animals are only given out on requisition. Each section of six men is entitled to 50 frogs and 12 mammals. Animals beyond this number will be charged for at the rate of 10 cents for each frog, 60 cents for each rabbit or dog and 40 cents for guinea-pigs.

Reagents.—Two sets of the more commonly used reagents and one set of those more rarely used are placed on each table intended to accommodate six men. These are arranged alphabetically and numbered consecutively, the student being requested to replace each bottle in the proper order as soon as it has been used. The only exception to this are the reagents for experiments 5 and 9, a set of which is kept on a separate shelf. It is the duty of the assistant to see that the bottles for the current experiments are properly filled.

For the animal experiments a special shelf is kept on which bottles of all reagents for each set are arranged alphabetically and properly numbered. The reagents for the current experiments are removed to a separate and easily accessible shelf. The Harvard plan of having but one stock bottle for each reagent, a dozen empty bottles for each set and a set of exchangeable tag labels—the bottles for each set being relabeled and refilled for each experiment—could be substituted. The cost of reagents for the chemical and animal work need not exceed $100 per year for a class of fifty students.

ARRANGEMENT OF TIME AND SUBJECT MATTER.

A course of the kind which I have outlined above, and including pharmacology, in relation with therapeutics and toxicology, materia medica, pharmacy, prescription writing and laboratory work requires:

Hours for regular lectures, demonstrations, tests, reviews and other class-room work	110
Hours for elective conferences and theses	18
Hours for laboratory	120
Total hours	248

In our course part of this work is placed in the last weeks of the sophomore year, part continues through the junior year, the juniors receiving 77 hours of class work, 70 hours of laboratory work and 18 hours of optional conferences. The sophomores receive 34 hours of class work and 48 hours of laboratory work. The hours are distributed as follows:

SOPHOMORES.—After March 1—Class-work: Monday and Tuesday 10 to 11, Thursday and Friday 9 to 10. Laboratory work: Monday and Tuesday 11 to 12, Thursday 10 to 11, Friday 10 to 12.

JUNIORS.—Class-work, entire year, Monday and Thursday 8 to 9, after January 1: Monday 2 to 3. Laboratory work: To January 1, Monday, 12.30 to 4; Wednesday 3.15 to 6.15. Optional conferences and theses (alternating) after January 1, Wednesday 3 to 4.

DISTRIBUTION OF LECTURES, RECITATIONS, DEMONSTRATIONS.

The following will give an idea of the hours allotted to each subject:

	Lectures.	Recitations.	Demonstrations.
Pharmacognosy, pharmacy, pharmaceutical assaying, toxicological analysis, flavors.	1	8	4
Prescription writing	—	10	—
Introduction to pharmacology	2	1	—
Strychnin, caffein and picrotoxin groups.	1	4	2
Morphin, cannabis, hydrastis, cocain groups	1	4	1
Atropin, nicotin, pilocarpin, physostigmin, etc.	1	4	1
Internal secretions, emetics, aconite, veratrin, quinin	1	4	1
Coal-tar derivatives, toxins	4	3	—
Hydrocarbon narcotics,	1	4	1
Gases, camphor, cyanids, nitrites	1	2	1
Digitalis, ergot, sapotoxin	1	4	1
Salt action	2	3	—
Ion action of neutral salts, acids and alkalies	1	4	—
Systemic action of metals	1	3	—
General irritants	1	4	—
Stomachics, cathartics, anthelmintics	—	3	—
Demulcents, emollients, nutrients	1	2	—

In concluding, I wish to reiterate that my purpose in writing this paper has been, to place before the profession *one* scheme of teaching these subjects. I feel convinced that similar expositions from other teachers, either in journals or by correspondence, would be of great mutual advantage.

THE PLACE AND IMPORTANCE IN THE COLLEGE CURRICULUM OF MATERIA MEDICA.*

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Notwithstanding that about 95 per cent. of medical practitioners devote nearly their entire time to the practice of internal medicine by the application of remedies found in the materia medica, the greatest interest in the profession is centered upon therapeutic agents other than medicine. Looking over the programs of several state medical societies it is observed that nearly all the papers read are along the lines of surgery or some kindred topic. In the smaller medical societies only an occasional hour is given to the subject of materia medica or therapeutics. The text-book of to-day on internal medicine devotes little space to the treatment of disease and almost none to subjects pertaining to our materia medica, while whole volumes in surgery are devoted to surgical therapeutics. Among the younger members of our profession the brightest minds are allured by the brilliant successes of surgical therapeutics. Our pathologists study their science from an anatomic standpoint almost to the exclusion of functional pathology, and, indeed, some of them say there is no pathology when no structural changes are noticed, however evident the functional disturbance may be.

In the curricula of our medical colleges a great percentage of the time is given up to surgery, surgical anatomy, surgical pathology and kindred branches, while materia medica and its sister branches of pharmacy and therapeutics are given a minor place.

A surgical clinic attracts a large audience, while only a few remain to witness a clinic of internal medicine, and then the clinician seldom discourses upon that which he hopes will effect a cure for his patient. I do not speak of this state of affairs as a protest against the indifference for the consideration of our subject, but hope to call attention to the facts as they exist and see if we can locate the cause for this condition in the education of the doctor.

The reason that surgery is so attractive and so remunerative to its followers is that the whole system is built on therapeutics. The anatomy and the pathology that he studies is made subservient to his ultimate purpose, the cure of his patient; and surgeons never tire of listening to discussions as to the best method of operative procedure, even to the finest detail. Even the tying of a peculiar knot in a ligature has entertained an

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audience in the American Medical Association, and the essayist has received the applause and congratulations of his colleagues.

Not so in internal medicine. Some of the leading lights in this branch of medicine say, with a measure of pride: "We know nothing of therapeutics and less of materia medica."

In some of the largest clinics in this country and in Europe the clinician, after an exhaustive study of the scientific aspect of his case, not only says little or nothing about those agents which might be brought to bear to cure the patient, but does nothing, and apparently waits, rather impatiently, for the postmortem to verify his opinions as to the pathology of the case.

He who aims to practice medicine for the good he may do or who hopes to build a practice by the results he achieves, finds little allurement in ante-mortem theorizing and postmortem verification. Our patients come to us to be cured, and when internal medicine shall make the means of cure its central figure and the purpose of the study of diagnosis and pathology, normal and pathological physiology, lead the way to therapeutics, then will the therapeutics of the materia medica interest the practitioner as does surgical therapeutics.

One of the noticeable things of to-day is the skepticism of the profession regarding drugs. The cause of this is, no doubt, the natural reaction from credulity. The young physician, and sometimes the older one, believes what some fellow physician or some traveling salesman says of the efficacy of particular drugs in particular diseases; and when disappointment overtakes him, as it surely must, he is prone to condemn drugs in toto.

How few physicians know the exact physiologic action of the drugs they use every day in their practice! How few take the same interest in functional disturbances that they do in organic lesions! It is as important to understand the physiological action of the agents employed in the cure of disease as it is to recognize the pathologic conditions, both functional and structural, in the patient. It is as essential to know the limitations of the agent as it is to know its potency.

A few years ago the wise men proclaimed that our materia medica would be relegated to the archives of ancient history in a very short time. The signal success of diphtheria antitoxin forecast in their minds an era when the hypodermatic syringe and the box of assorted serums would be the complete armamentarium of the future doctor. Time has not verified their predictions, nor has it added many successes along the line of serum therapeutics; but the investigations of these enthusiasts have given us a rational explanation for the use of many drugs. The knowledge that we now possess of cellular activity and the cause of disease should be a stimulus to a more scientific study of the remedial agents found in materia medica. Recognizing the fact that all doctors rely upon these remedial agents most of the time, and most of the doctors rely upon them all of the time, we must conclude that materia medica should have a very prominent place in the curriculum. The teacher should be an enthusiast in order to inspire the student. He should have that confidence in his subject that is gained by thorough knowledge and happy experience.

A famous jurist once said to his law student: "In your practice of law beware of the attorney with a small library, he has it in his head." In the teaching of materia medica I would suggest a small but carefully classified list of drugs that shall be thoroughly studied and demonstrated. The most eloquent man in the world could not teach diagnosis except in the presence of disease; neither can the most scientific teacher of materia medica bring his instruction to a successful issue without the presence and the demonstration of his drug. The chemical and physiologic laboratory must be brought into requisition, and these kindred branches must be so interwoven in study of materia medica that the student can not tell where one begins and the other leaves off.

The teaching of this subject should be by means of didactic lectures, laboratory demonstrations and quizzes. As I believe it would be inexpedient, if not impossible, for a medical student to learn all of the drugs in our materia medica, it should be the duty of the teacher to select those which he deems most important and so classify them in accordance with their physiologic action that the whole field of medical therapeutics would be covered.

I believe that the importance of this classification can not be overestimated; unclassified knowledge is of little use and is soon forgotten. The drugs in each class should be arranged according to their therapeutic value, rather than in alphabetic order, and the same distinctions should be made in teaching of their physiologic action as is made in the study of synonyms in rhetoric. In this way, by the use of a comparatively few drugs, the student has a sufficient knowledge of the essentials of materia medica, to which he may add innumerable remedies, and be able to make the finer distinctions. This would do away with text-books on the subject, and in their place we would have reference books, as the student would be trained in library practice, which would serve him a good purpose in future years.

Laboratory instruction should consist, not only in studying the physical and chemical properties of drugs, by which the memory would be assisted by an actual acquaintance with them, but it should be carried into the physiologic laboratory; and pharmaco-dynamics should be so demonstrated on the lower animals as to make a lasting impression on the mind of the student.

There should be at least two hours a week for one college year devoted to recitations upon this subject, beside the instruction already mentioned. If, in addition to this, the course in physiology could be so arranged that a reasonable portion of the time be devoted to function, with a view to possible derangement and cures, and the work be made to harmonize with that of pharmaco-dynamics, the student of materia medica would be so interested that this branch would be studied because of his love for it rather than because it is an essential to graduation.

The study of pharmacy, materia medica and therapeutics can not be separated, and they must not be crowded into any one portion of the college course. From the day he enters the college until he passes his final examination the subjects of the cure of disease by remedial agents found in materia medica should ever be kept before the student. In the first year he should be introduced to the subject through pharmacy and chemistry. In the second year he should be interested in it through the subjects of physiology and physiologic chemistry. In the third it, with therapeutics, should be made the basis of the preliminary study of medicine; and in the senior year materia medica in the form of the prescription should be made the cap-sheaf of his study in medicine.

Chewing Pitch Good for the Teeth.—A Swedish physician, who has made a study of the subject, finds that the chewing of Burgundy pitch, which is common in some sections of that country, has a marked effect in preserving the teeth.—*Popular Mechanics.*

THE PLACE AND IMPORTANCE IN THE COLLEGE CURRICULUM OF THERAPEUTICS.*

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In discussing this question it is important that we should arrive at a definite conclusion as to what is meant by the terms materia medica and therapeutics. Sometimes these terms are used interchangeably and sometimes materia medica is used to designate the study of the medicinal substances themselves; their derivation, active principles and pharmaceutic preparations. This, I believe, to be the more modern use of the term "materia medica," while therapeutics deals with the practical application of the drugs to the relief or cure of disease, and should, in my opinion, include the study of the physiologic action, or pharmacology, of the remedies under consideration. In expressing my views as to the best means by which students are to be taught these important subjects, I may perhaps be pardoned if, for the sake of brevity, I describe the course which I have arranged for the students attending the Jefferson Medical College, in which institution I have charge of the subjects under discussion. And it is needless to say that I believe this to be the proper way of teaching materia medica and therapeutics or I would not have it so carried out.

THE PLANS OF THE FRESHMAN YEAR.

In the first year the student has one recitation and one lecture a week in which he is taught the derivation of the more common drugs; their official names; the doses of the preparations commonly employed; the predominant symptoms of poisoning by the common poisons and the antidotes for the same, and in addition, for six weeks of the term, he receives instruction in the pharmacy laboratory, the class being divided into sections so as to allow of individual teaching. In this laboratory each student has the opportunity of handling crude drugs, and he also is taught how to prepare all of the official preparations of the United States Pharmacopeia. I do not mean by this that he prepares all of them, but that he prepares, under the direction of competent demonstrators, a syrup, a tincture, a fluid extract, etc., taking one individual preparation as a type of a class; this course being designed not only to familiarize him with the crude drug and official product, but also to give him a clear conception of the difference between the various pharmaceutic preparations and to give him information which will prevent him from writing prescriptions which contain chemical and pharmaceutic incompatibilities. At the end of this course he has a practical laboratory examination covering his work in the laboratory, the mark in which counts a certain number of points, and he also is examined on the ground covered by the lectures and recitations which he has had during the year.

THE SOPHOMORE AND JUNIOR YEARS.

During the second and third years the student attends the lectures on general therapeutics, and is examined at the end of the third year on this course. These lectures consist in a description of the physiologic action and therapeutic application of the various remedies. The study of the physiologic action of the drug is not carried on separately from its therapeutic effect, but the practical application of our knowledge of its physiologic action to the pathologic condition present is carefully discussed. In this way I believe that it is much easier for the student to gain knowledge, both as to physiologic action and therapeutic application, than when these two subjects are considered separately. At the end of the third year an examination is held on the course just named. During the third and fourth years the student attends twice a week a general medical clinic, in which I devote special attention to diagnosis and the practical application of therapeutics. This clinic is not only illustrated by a very large number of cases in clinical medicine but its interest is also largely increased by the use of a powerful stereopticon, by means of which prescriptions, showing how certain drugs can be advantageously combined in the treatment of a malady, are thrown upon the screen without the room being darkened. This lantern is also used for the purpose of throwing pictures on the screen which illustrate cases of a similar character which have been brought before the class in previous years, so that instead of one case the lantern often permits me to show as many as six cases in addition to the actual living subject which is present. This lantern also permits me to throw on the screen colored pictures showing pathologic changes and diagrams illustrating physical signs. These pathologic illustrations are often of value, not only for the purpose of impressing on the student how drugs may do good, but equally important for impressing upon his mind that in certain conditions drugs can be of no value whatever so far as the pathologic state is concerned. Thus, if the student is shown a lung which has undergone croupous consolidation, it is not difficult to impress on his mind that the employment of chlorid of ammonium as an expectorant under such circumstances is useless, since it can in no way influence the process of resolution. On the other hand, it impresses on the mind the fact that chlorid of ammonium may aid in expectoration in the later stages of resolution by aiding in the expulsion and relieving the congestion of an inflamed bronchial mucous membrane. In the teaching of therapeutics it is as important, in my mind, to teach the student when not to employ drugs as it is to teach him when to employ them. Too often a young graduate leaves his alma mater with the idea that properly applied remedies can cure everything. Under these circumstances he speedily meets with disappointment, and is often driven to the other extreme, in which he becomes a therapeutic unbeliever, when in reality had he been properly taught he would have become a rational and safe therapeutist.

THE SENIOR YEAR.

During the fourth year the senior student not only attends the clinic just mentioned, but also hears lectures once every alternate week on special therapeutics, including such subjects as hydrotherapy, electro-therapy, climatology, mineral springs, serum-therapy, etc. In the other week he attends a therapeutic conference in which he is quizzed on the treatment of real or supposititious cases and is required to write prescriptions on the blackboard embodying his therapeutic views, which prescriptions are then criticised as to their construction and therapeutics before the class.

This course is the result of some eighteen years' experience in the treatment of this subject, and I believe that it meets the needs of the student. As an illustration of what the course is intended to teach I may be permitted to quote two paragraphs which are found on the fly-leaf of the ninth edition of my text-book of "Practical Therapeutics":

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Materia Medica, Pharmacy and Therapeutics, and approved for publication by the Executive Committee: Drs. A. W. Baer, A. B. Lyons and W. J. Robinson.

"When called to guide a patient through an illness, the physician should be constantly a watchman, and a therapeutist only when necessity arises."

"A good physician is one who, having pure drugs, knows when to use them, how to use them and, equally important, when not to use them."

DISCUSSION

ON PAPERS OF DRS. HILL AND HARE.

DR. LEFEVRE, Cincinnati—I approve of the remarks of the first speaker, with regard to the relative neglect of therapeutics by medical schools in general and by the profession. I have been connected in a teaching capacity with this particular branch for a number of years. After several years I adopted a plan which was practically that outlined by the last speaker. In the first year I have the students devote their time to the study of the physical qualities and properties of drugs and their combinations, but nothing at all about the physiologic effects or therapeutic properties or applications. In the second year they are taught the physiologic action and in the latter half of the second year pharmacology is taken up, and a classification made of several types of drugs on a pharmacologic basis. Quizzes are carried on in connection with the lectures. In the third year instruction is conducted by didactic lectures, quizzes and demonstrations of the clinical action of drugs. Conferences are held, devoted to the consideration of remedies acting on the heart, or on the nervous system, or other special organs. Notice is given in advance so that the students come prepared for these discussions. In the lectures during this part of the course the general properties of the drugs and their applications to certain diseased conditions are reviewed, the different drugs being presented in the order of their relative value in the treatment of the condition under consideration. In the fourth year clinical conferences are given to the graduates. Certain cases are assigned for study and placed on the bulletin board, so that the students may prepare themselves to discuss these cases at the conference. Special instruction is given also in the fourth year, in electrotherapeutics, balneology, the effects of heat and cold and other non-pharmacologic topics, by special lectures and demonstrations. This whole course is so arranged and conducted that the student may gain practical knowledge of the subject, in addition to the usual theoretical knowledge.

I wish to allude to the uselessness of the questions asked by the medical examining boards. I have made a list of a number of such questions given by medical boards of various states to candidates for license to practice medicine. For instance: the uses of pumpkin seeds had been asked twenty times, and there were others equally useless, about minor drugs. It would seem that they chose the useless articles of the pharmacopeia rather than the main drugs and their therapeutic applications. With regard to the subject of classification of drugs, I agree with Dr. Hill, and I would follow the plan of grouping them according to their application to certain disturbed functions. This can only be done with a student who has a knowledge of the physiologic action of the drug. With advanced students such a classification is of much service in studying materia medica. With very few exceptions I have adopted the methods outlined by the preceding speakers with their classes, and I think if carried out further they will lead to more definite teaching and better knowledge of the subject.

DR. A. W. BAER, Chicago—In the hospitals and dispensaries, the student goes through all the clinical rooms except one—the drug room. It is within the province of teachers to render great service to their students by pointing out to them the great benefit to be derived from spending at least part of their summer vacations in a pharmacy. Any young man, with the necessary acquaintance, can easily get a situation in one where he can learn more in three months, regarding the properties of drugs and their combinations, than he can learn in a medical college in two terms of four months each.

DR. FRANCES DICKINSON, Chicago—In the school with which I am connected it is the practice to postpone the teaching of the physiologic action of drugs until the third year. Such teaching requires special apparatus for demonstration, and few schools have the necessary equipment and facilities for teaching and demonstrating the action of drugs from the physiologic standpoint, or their physical effects. With such appliances the student can grasp the facts of the science better and they are more firmly impressed on his mind, when the methods of study used in the physiologic laboratory are followed, rather than by attempting to memorize the subject directly from books. With regard to the classification of drugs the arrangement according to their physiologic action has a scientific basis. It is advisable to make out a list of the drugs of special importance to be taught thoroughly in the curriculum, and then, just before the men go before the state boards, to give several evenings to a review of the drugs of minor importance so that they will be thoroughly prepared. The study of pathology is dead at present; it should be connected more closely and logically with the therapeutic use of drugs from chemical and physical action standpoints.

DR. WILLIAM J. ROBINSON, New York—There is one point which does not seem to have been sufficiently emphasized. We all recognize the importance of therapeutics, but we do not realize that our own neglect of it has led to the growth and development of sects and quackery, such as Eddyism and osteopathy. Very often men who are empiric are very successful in treating minor ailments, which are less successfully treated by the higher scientific practitioners. Some physicians who are well up in pathology may not be good practitioners; they are too apt to neglect, or consider as beneath their dignity, the trifling ailments of their patients, which other physicians of less scientific attainment treat successfully. If irregular physicians get their patients from us it is due to our own neglect of therapeutics of these minor ailments. I endorse the views of Dr. Hare as to the questionable usefulness of an attempt at classification of remedies. Take up a text-book that has such a classification and the failure is at once evident: acetic acid, for instance, is classed as a cardiac depressant, etc. Drugs can not be classified therapeutically without being subject to criticism; in fact, they might almost as well be arranged alphabetically for convenience of reference; of course, drugs very closely related, like the solanaceæ, or digitalis and strophanthus, should be classified together.

With regard to the character of the questions asked by medical state boards, I once asked an examiner why he asked questions about drugs that were of so little importance, who replied: "Of course, on the principal drugs the student would be well prepared and there would not be enough questions to go around. We would be obliged to ask the same questions over and over again, so we have to take the less known drugs for examination." This, at least, gives some explanation of their course in asking apparently useless questions. I approve the suggestion of the last speaker with regard to the value of actual experience in drug stores for medical students. It will not improve him as a diagnostician, but will make him a better prescriber; one less likely to combine incompatible chemicals, and it would acquaint him with drugs as they are used at present in the treatment of disease. A short apprenticeship of about three months behind the prescription counter would be sufficient.

DR. ELI H. LONG, Buffalo—It is a hopeful sign that those engaged in teaching the subjects of materia medica and therapeutics should meet and compare their methods. I agree in the main with Dr. Hill and think the course outlined by him admirable. It is one that I can endorse from my own experience. As regards the matter of small attention being paid to therapeutics, the remedy for this state of affairs lies in our own hands. The time is very rapidly approaching when the physician and the surgeon will recognize the usefulness of drugs to a far greater degree than they do at present.

In my own course, materia medica is taught in the second year as a laboratory subject; the students are seated at tables and given a limited number of the most important drugs for thorough study under the direction of the lecturer, their constituents, properties and general uses being learned in this way. The pharmacal laboratory course during the same semester includes experimental incompatibility. During the

same year a recitation course introduces therapeutics and a course in experimental pharmacology familiarizes the student with the positive action of the important drugs. At the beginning of his third year the student knows a great deal of chemistry, anatomy and physiology and some pathology. He is in possession of facts from which he can draw practical deductions as to the use of remedies in practice. In aiding the student to do this, I do not teach by lecturing, but by conferences with the students. Assuming that they know their materia medica and physiology, I review with them the pathologic conditions present in disease, and help them to reason out the application of drugs to suit such conditions. The importance of teaching the student to think and reason out for himself can not be too highly estimated. He is thus taught to do before graduation what he would otherwise have to learn in his first years of practice. I am glad to know that prescription work is now emphasized. I teach practical prescription writing in the fourth year. The students write prescriptions for clinical and hypothetical cases, their work being then subject to criticism and discussion by the class.

DR. HORATIO C. WOOD, JR., Philadelphia—It is a point of considerable importance in teaching whether we attempt a classification or not. Because we can not classify drugs exactly scientifically, we should not therefore abandon it entirely. If we can not at once give a complete classification of remedies from a therapeutic standpoint, it is no reason for not trying to do so. If we do not make any attempt, it absolutely puts an end to progress. The classification used in botany to-day is different from that which prevailed a few years ago, and may undergo other changes. The classification of plants according to the color of their flowers would be just as scientific as the alphabetic arrangement of drugs. The man who adopts an alphabetic classification of remedies is not contributing to the advance in therapeutics. For illustration: we know that digitalis and strophanthus have a similar action on the heart, and it is of great assistance to the student if they are grouped together. If, on the contrary, he studied digitalis early in the year and several months later he came to strophanthus, in the alphabetical arrangement of drugs, he might not succeed in establishing their relation in his mind, and their resemblance might be overlooked. Classification of some kind is of great assistance to the student, and the therapeutic or physiologic method will aid him in keeping the common properties of remedies of the same group in his mind, and will enable him to retain them for his future needs in practice.

DR. HENRY SLACK, Lagrange, Ga.—I agree thoroughly with Dr. Hill. About five years ago I made a tour through a number of medical schools to observe their method of teaching therapeutics, and from what I observed I came to the conclusion that the profession was drifting toward therapeutic nihilism or empiricism. Teaching has improved somewhat since, but it is not yet all it should be. One of the weakest points in teaching is the dispensary work. The student gets a large portion of his practical knowledge in the use of drugs from his experience in the dispensaries, where the method is to use stock preparations which are distinguished by numbers or letters. For instance, a physician came to New York from another state and prescribed a mixture under the title of "M. G. A." The pharmacist could not fill it and the physician had to search in his notes for nearly fifteen minutes to find out himself what the composition of "M. G. A." was.

DR. SOLOMON SOLIS-COHEN, Philadelphia—I did not hear the papers, but they are on a subject on which I entertain very decided convictions. There can be no doubt that the reason why the patent medicine man has such success and why so many proprietary preparations are used is that the average medical student when he leaves college has not learned how to prescribe. He may go out with the idea that drugs are to be given according to some mysterious principle known only to his teacher, or as a therapeutic nihilist. To remedy this but one thing is necessary: it is to make the medical student think out the prescriptions in his college course and learn to write them intelligently before he gets his diploma. Let him frame a prescription for an actual patient in the presence of his teacher, who can show him where he is wrong and wherein he is right and explain the reason; he will then soon learn the correct principles of drug prescribing. Just as in any other problem, however, the condition must be stated and understood before the solution is possible. Anatomy, physiology, pathology, etiology and diagnosis, on the one hand, and chemistry, physics, materia medica and pharmacodynamics on the other hand must be known before therapeutics can be studied as the keystone of the medical arch. No matter how much a man may know of abstract science, the patient comes to the physician as to a "healer," and the latter's accurate knowledge of pathology would have very little value if he could not assist or relieve the sufferer. The sick man is not merely a unit in a column of statistics, but a living, sentient, human being and is so to be managed. I tell my students that the clinical diagnosis comes first, but it is not sufficient merely to call a morbid process by a name. One must also make the pathologic diagnosis; that is, to determine the special morbid changes that are going on in an individual patient at the time of examination and forecast their probable course. Then the etiologic diagnosis is to be made—the causation originally, and the causes now active or likely to become active are to be sought for. After this comes the therapeutic diagnosis: Can the causes be removed or overcome? What is the evolution of the disease and can it safely be left to itself, or do dangers threaten from which the patient should be guarded? If dangers threaten in the course of normal evolution, shall we interfere, and if we determine to interfere, for what purpose and in what direction shall the interference be made? Then, we have to decide by what means to interfere, considering not only the pharmaceutic agents at our command, but also the physical and psychic influences through the use of which we can best attain the definite object we have in view. Now, unless in previous teaching the remedies have been classified, the student knows not where to look in his mind for the name of the particular drug, or measure, or means, that will do what he has decided ought to be done. The kind of teaching that will bring him up to that point must come, so far as concerns materia medica, from teaching a few drugs exhaustively in connection with physiology and functional pathology, and others in subordination to the main examples. We must not, however, neglect similar teaching of physical measures or fail to take account of the mental processes. The time has come for the profession to take out of the hands of the quack these potent agents. Suggestion as well as the more tangible remedial measures has its legitimate use.

DR. HILL, in closing—In regard to the classification of drugs from a physiologic standpoint, while I realize that a perfect classification in this way is impossible, still we may group the principal ones satisfactorily and the balance we may put under the head of alteratives. I have never taught a student with a view of his passing state boards or final examinations, but I believe a student who is well grounded need fear no examinations. A man who knows all about a few things and a little about all things is regarded as an educated man. The same rule is applicable to the study of drugs. A familiarity with all drugs is desirable, but a working knowledge of one or more principal drugs of each physiologic class is essential. Grouping the drugs of minor importance around the principal ones not only facilitates the memorizing of them, but also enables the student to make practical application of the knowledge he possesses. I believe the sophomore year is the place for pharmacodynamics, as the student is then studying physiology and pathology. If the curriculum can be so arranged that a portion of the time given to pathology be devoted to functional pathology and the work in this branch be made supplemental to physiology and pharmacodynamics, the student, when he reaches the junior year, will be ready to take up the application of drugs to disease. This work I do in a systematic way in the first semester of the junior year, the second semester being to class conferences in hypothetical cases. In the fourth year I treat applied therapeutics in the hospital clinics. Cases are given individual students who write complete histories and descriptions of existing pathologic condition (organic or functional). Treatment is outlined by him and prescriptions written, then the patient and

history are brought before the class for discussion and criticism. In this work we aim to treat the existing conditions—or, as some one has said: "to treat the patient."

MENTAL THERAPEUTICS AND THE NEED OF PSYCHOLOGY IN THE MEDICAL CURRICULUM.*

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Every illness is a factor simple or complex, which is multiplied by a second factor, invariably complex—the individual who is suffering from it. The doctor who does not read you to the bottom is ignorant of essentials. To me the ideal doctor would be a man endowed with profound knowledge of life and of the soul, intuitively divining any suffering of whatever kind, and restoring peace by his mere presence. Such a doctor is possible.—*Amiel's Journal.*

Physicians need no argument to show that purely physical processes may cause profound mental changes. Every case of lesion of the brain, every delirious fever patient, every exhilarated banqueter, furnishes a fresh illustration of the fact. The converse proposition, that purely mental processes may cause profound physical changes, still excites a tendency to doubt or wonder, but it is just as true and special instances are just as familiar. The blanched face, chattering teeth, shaking limbs and weak, irregular heart of a person who is merely frightened; the nausea, cold extremities, arrested digestion, prostration and loss of weight in a previously healthy person who has merely received bad news by telegram; the manifestation of muscular energy in response to an idea, which occurs in every voluntary action; all these are constantly recurring proofs which might be multiplied almost indefinitely.

Our modern knowledge of the brain goes far toward a satisfactory explanation of this mutual action of body on mind and mind on body. Every sensitive part of the body has its sensory area in the cerebral cortex; all the voluntary motions are represented in regular order in the motor keyboard of the Rolandic region. Changes in the body modify the sensory currents which are constantly streaming into the cortical centers and so modify sensations which are the raw material of all forms of consciousness. Every emotion, every thought causes nerve currents to pass from one group of cortical centers to another and ultimately to muscles, viscera and all other tissues. Every thought about an organ of which one is conscious excites the corresponding sensory and motor centers and through them modifies the function of the organ. Emotional disturbances cause a particularly energetic disturbance of the thoracic and abdominal viscera whether these organs are thought about or not.

These generalizations are familiar enough now, but they have not improved medical practice as such great physiologic truths ought to improve it. The majority of us treat patients as machines out of order, to be repaired by purely mechanical, physical or chemical remedies. Yet, with only insignificant exceptions, a physician must always make a strong mental impression on his patient. And if such impressions exert a physical action for good or ill comparable to that of powerful drugs or of electricity, then surely it is incumbent on us to make our knowledge of mental processes and their effects as accurate, full and systematic as possible. It is the object of this paper to give specific illustrations of the need of psychologic knowledge in the practice of medicine in general. Insanity will not be included, for, strange to say, the great problems of mental disease are physical rather than psychologic problems. Hypnotism will also be omitted from the discussion, as I do not regard it as an eligible therapeutic agency in any but exceedingly rare cases.

An Illustrative Case.—Some years ago a young Russian Jew came to Denver from one of the hospitals in Philadelphia, armed with a big box of creosote pills, which were to aid him in a desperate fight to escape death from consumption. Less than a year before, while in apparently robust health, he had fallen into the water and was almost drowned. A violent cough began the same day and grew steadily worse, often being accompanied by vomiting. After a time blood appeared in the sputum and hemoptysis became first a frequent and then an almost constant symptom. Latterly blood had appeared in the urine also. His weight had fallen from 205 to 155 pounds.

He appeared at the Dispensary of the University of Denver, coughing incessantly and panting for breath, so that it seemed impossible for him to talk; his handkerchief was constantly held to his mouth and was covered with blood stains. The students thought he might die at any moment.

But a thorough physical examination revealed nothing abnormal in the chest, so he was sent to me with the expectation that I would find a grave organic lesion of the central nervous system. I found right hemianesthesia, amblyopia of the right eye, complete loss of hearing, smell and taste on the right side, aphonia and some weakness of the right arm and leg, the whole combination being perfectly typical of hysteria. The history contained many points strongly indicative of an hysteric origin of all the symptoms. The blood on the handkerchief was genuine, but pale and thin, as though much diluted by saliva. The urine passed then was clear and contained no albumin.

The diagnosis of hysteria was made at the first interview and, in the presence of a number of students, a most impressive statement was made that the true nature of the disease had now been discovered and that he would be cured very quickly if he would only do exactly as he was told. His respiration was over sixty per minute and the first thing was to drill him into breathing slowly. Then, after some electrical applications, made solely for psychic effect, he was sent to his lodging with the positive assurance that slow breathing would entirely stop the coughing and spitting of blood and that he would sleep soundly that night. To insure fulfilment of the latter prediction, he was given ten grains of chloral to take on going to bed. Other drugs were purposely omitted.

The patient slept that night and returned next day in an exuberant state of happiness; the dyspnea and cough were practically gone, there was no blood in the saliva and the voice was much stronger. St. Luke's Hospital admitted him as a charity patient and on full feeding and continued encouragement he gained very rapidly in weight and strength. Some days after admission he insisted on going out to beg some money and on returning unsuccessful was tearful and apparently greatly depressed. The next morning the house physician observed that there was blood in the sputum and also in the urine. This disappeared during the day but was noted again the following morning. The specimen of urine furnished me each morning was of a clear crimson color, without sediment, contained albumin, responded to the guaiac test for blood and under the microscope showed many red blood cells. With the blood cells was a considerable number of squamous epithelial cells which I supposed to be from the bladder. Only here and there was a columnar epithelial cell observed. Blood did not appear again in either urine or saliva and the patient made very rapid progress, about 25 pounds being gained in a few weeks.

He then left my care, saying he must return to his family in Philadelphia. For some reason, probably to get a little money from me, he was lying, and instead of leaving Denver, went to work in a livery stable. Some days later, while currying a

* Read before the Colorado State Medical Society, June, 1902.

horse, he sank to the ground and was found to be paralyzed on the right side. Speech was retained and he cried a great deal. Two weeks after this the physician who had examined his chest happened to find him in a lodging house and told me of his condition, remarking that whatever else might be hysteric, this hemiplegia was organic. Some students hunted the man up and brought him to my office. I found the right arm and leg in rigid extension; the foot was dragged, not swung; the face and tongue were not involved; right hemianesthesia had returned; in short, the paralysis was clearly hysteric.

After some reproaches I promised to cure him again, at 11 o'clock the next day. The students saw to it that he kept his appointment and after some electrical stimulation of the affected muscles, followed by manipulation and exercise of each joint, used only to restore confidence, he used both the leg and arm very well, only a slight awkwardness remaining. I never saw him after this, but have no doubt that he relapsed before long.

This case is, of course, a very unusual one, but it is highly instructive on account of the prompt disappearance of such alarming symptoms under a treatment intentionally limited to mental impressions†. All cases of hysteria are like it in having mental perversions for their exciting cause and in being absolutely defiant of any treatment which does not, intentionally or accidentally, include the right mental effect. Cases of hysteria, moreover, are common in all branches of practice. They come to the practitioner of internal medicine disguised as grave gastric or intestinal disorders, as heart disease, as epilepsy, apoplexy or what not. To the surgeon they may appear disguised as an exquisitely painful inflammation of a joint, as a foreign body in the esophagus, as appendicitis or as a neuralgia perhaps so intense as to demand amputation for its relief. The gynecologist sees the symptoms of organic pelvic disease closely simulated by hysteria. The oculist sees hysteric amblyopia, spasm of the internal recti, often mistaken for insufficiency of the external recti, spasm of the orbicularis simulating ptosis, and so on. The laryngologist deals with hysteric aphonia, hysteric cough and hysteric laryngeal spasms. Even the dermatologist has his cases of pure hysteria.

But, vast as the field of hysteria is, it is by no means the only disease in which psychic methods are necessary. Many cases of neurasthenia, although they seem to be caused by exhausting physical influences, are in reality mainly due to a persistent depressing idea. Worrying about imaginary disease may be more harmful than the effects of the real disease. Many a man carries a mental burden for months or years because he has an occasional seminal emission or because he has discovered a little mucus at the meatus or the normal epididymis, or the veins of the spermatic cord, or that the left testicle hangs lower than the right. That a nervous woman's mind is often fixed upon her pelvic organs, to her great detriment, is well known to every physician. Similar false ideas in regard to syphilis, heart disease, tumors and the effect of injuries are far from being rare. A morbid idea of this kind constitutes a mental traumatism which is often the most important fact in the case, and no treatment can succeed unless it includes persistent systematic effort to eradicate the false notion and to replace the state of emotional depression by one of serenity and confidence.

Digestive derangements are of the greatest importance in general practice if only on account of their frequency. It must be admitted that great additions have been made to the knowledge of normal and pathologic digestion and much greater precision in diagnosis and treatment attained. Still the profession is very far from recognizing the full importance of mental factors in the etiology of functional digestive disorders. Excessive mental work, worry and depressing emotions are the primary causes of a very large proportion, perhaps of a majority, of the cases of disturbed digestion; yet these causes are commonly ignored and the remedy sought in pepsin or hydrochloric acid or a severe restriction of diet. These remedies, although suggested by conditions actually present, fail to remove the real cause, unless by accident, and they often do harm. In the course of evolution the whole process of digestion has become excessively sensitive to attention and especially to the idea that the food is in any way wrong. Close, anxious attention to one's diet is certain to impair digestion whether the foods selected be in themselves good or bad. The physician must, of course, have due regard to the chemistry of digestion and restrict the diet in certain cases, but he must also understand the relation of digestion to the functions of the nervous system; in short, he must know the whole man.

Much might be said of the psychic factors in the formation and correction of bad habits. See, for instance, what is accomplished in the "Keeley cure" simply by following each indulgence in whisky with a hypodermic of apomorphia, the patient supposing it to be his usual tonic. Intense nausea and vomiting thus become associated with the mere thought of taking a drink and powerfully reinforce the desire to abstain.

In nervous patients we frequently find an emotional condition which causes over-contraction of the voluntary muscles and embarrassed, rapid respiration. This is an important source of distress and exhaustion and must be obviated by teaching the patient not to attempt to hold the nervousness in, but to relax the muscles and to breathe freely and slowly. Bodily relaxation and easy breathing strongly favor mental serenity; indeed, they are quite incompatible with intense emotion, and on this account they will infallibly prevent any form of hysteric paroxysm if the patient can only be induced to put them into practice in the incipient stage of the attack.

In treating any class of diseases in which there is a hysteric or neurasthenic element the physician is often embarrassed by the patient's statement that the medicine disagrees, although it has been carefully chosen and proportioned to the needs of the individual case. In the great majority of such instances the supposed disagreement is due solely to suggestion. The patient is liable to bad sensations and at some previous time has felt badly when taking a drug similar in some respect to the one now prescribed. Consequently any disagreeable feeling, whether evoked by expectant attention or occurring accidentally, is attributed to the new prescription and the physician is greeted with something like this: "Doctor, I had to stop taking that medicine; it nearly killed me. I ought to have told you that I never could take strychnia," etc. This is often a critical point in the management of the case. If the doctor innocently changes the prescription he will probably have to change again and again until the patient has a long row of boxes or bottles, each nearly full, on which he gazes, regretting the money he has spent for them and meditating upon the doctor's strange failure to understand his case. Instead of changing let the physician explain that the prescription

† For a discussion of hysterical hemoptysis and hematuria, see Gilles de la Tourette, Traité de l'Hystérie, vol. iii, p. 221 et seq., and p. 380; also Loewenfeld, Neurasthenie and Hysterie, p. 418 and p. 445.

is exactly right, that the apparent disagreement was due to suggestion and that persistence in the right course will bring success. But, as an essential corollary to this proposition, let the prescription for a new patient be a perfectly safe one and sufficient to last only a short time, so that it will all have been used when a change is desirable. The ease with which the physician, as well as the patient, may form a fallacious estimate of the good or bad qualities of drugs is apparent.

In infectious diseases, in organic affections in general and in surgical cases, the patient's mental processes count for comparatively little so far as recovery is concerned, yet even here they are of considerable importance. One of the ablest surgeons I have known had the same effect on many of his patients as on the students at examination time; they dreaded his visits and were in a state akin to stage fright as he made his daily rounds. It is not difficult to believe that certain patients, barely able, under the most favorable circumstances, to recover from an operation might have the scale turned the wrong way by this adverse influence. This particular man had great talents and acquisitions to make him successful. To one of merely average attainments his manner would have been an insurmountable barrier to success. And, on the other hand, we all know physicians of less than average knowledge and skill who nevertheless succeed admirably in acquiring and holding practice because they have the knack of impressing favorably a large class of patients.

But I do not wish to push the argument too far. It would be a grave mistake to rely mainly on mental influences in the great majority of medical cases. This is the mistake made by the Eddyites, often with tragic results. The proposition I wish to lay down is that in some very important cases the mental influence exerted by the physician is the only treatment that will succeed or is required, while in others it is an essential part of the treatment and in all is well worth taking into account as affecting both the patient's welfare and the physician's personal success.

It is no injustice to our profession to say that as a whole it has not studied the human mind sufficiently to meet the indications of everyday practice. The study of the body and the fight against the physical, chemical and parasitic causes of disease has been so engrossing that ignorance of the mind and the part it plays in disease could, perhaps, for the time being, be excused. But this ignorance will no longer be winked at. Agents so powerful for good or evil as suggestion and emotion can not be abandoned to fanatics and charlatans, nor will it be sufficient for an honorable profession to use them empirically. They must be skilfully employed on scientific principles for the good of the patient, not to deceive but to undeceive, not to make him wonder in weak-minded credulity but to strengthen him in rational self-reliance and bring him into a state of stable mental equilibrium.

To this end medical schools will in the future teach psychology as a fundamental part of the curriculum, just as they now teach physiology. This psychology will not be metaphysical, but a scientific description with, as far as possible, an explanation of normal and morbid mental processes and their bodily consequences. Sensation, perception, memory, association, emotions, will, hysteria, hypnotism, etc., must be studied in the light of all that is known of the structure and functions of the brain with clinical illustrations of the practical application of the knowledge gained to medicine.

Convinced of the importance of this subject, I have, during the past year, given to the medical students of the University of Denver a course of lectures on psychology in its relation to the practice of medicine, and the trustees have made it an essential part of the course. I believe that at present our school is a pioneer in giving systematic, although very elementary instruction in this field, but I predict that in a few years all schools will furnish more elaborate courses of the same kind.

Evolution of the Army Medical Department.—In his presidential address before the Association of Military Surgeons of the United States, Lieut.-Col. John Van R. Hoff discussed "The Broader Mission of Our Association." In the course of the address he said: "To-day the attention of our legislators is being directed toward the nationalizing of our state forces. Are the medical departments of these ready to assimilate? Have they reached the standard set for them by our honored founder in his memorable address? Some of our state guards have medical departments that leave little to be desired, but how many? I find by references to the latest returns that the organized militia numbers 115,749, of which 902 pertains to the medical department, including hospital and ambulance corps, about 0.8 per cent., less than one-half of what it should be for the most advanced line of assistance, leaving entirely out of consideration everything from there back to the base hospital, all of which would require not less than six times the total number of men now in the medical departments of the state forces. Are the medical departments of all states organized on identical lines? Are their medical officers members of a distinct corps? Or do they in some states yet linger, superfluous appendages to the regimental commander, to be made or broken at his whim? And as to equipment—is that uniform? Instruction—is that the same? Requisitions, reports, returns, regulations—do they correspond? Turning to the regular establishments, the association here also has a mission. It must demand of their personnel, both commissioned and enlisted, the highest degree of efficiency; it must see that their organization and equipment are as perfect, if not more perfect, than those of any other nation; it must provide a means, through our medical schools, for the dissemination of a knowledge of military sanitation in the profession at large, so that every physician will know something of the work of the medical officer. One of its most important duties is that a public medical school is established in which shall be educated those who are to become members of the three public medical services. Such a school should be organized in this city in connection with a great military hospital. To it should be nominated medical cadets exactly as are cadets to West Point or Annapolis. Here the enlisted force for the Hospital Corps should receive preliminary training for their important duties. In connection with the hospital should be a training school for women nurses for duty at fixed hospitals, and here special courses could be arranged for medical officers of the national guard. What a wonderful influence for good would such an institution develop! And last, but not least, the association must formulate plans by which private aid may be made to supplement, not supersede, the public service in time of war or other stress. But beyond these things, important as they are, the association offers to the military humanitarians of the world an opportunity to meet on common ground and co-operate in formulating methods for the mitigation of what must always be 'the horrors of war.' We see the beginning of this to-day in the presence of distinguished representatives of the medical department of foreign armies, gathered from all quarters of the globe, and may we not hope that through them and their successors the good influences of this association will be extended to the uttermost parts of the earth? Originated by civil practitioners to improve the efficiency of the medical department of the state forces, year by year the association has broadened its lines until it embraces in its membership not only the medical officers—past and present—of the national guard and volunteers, but of the army, the navy and marine-hospital service as well. Our doors are now opened to the medical officers of the armies of all nations."

MEDICAL SCHOOLS IN THE UNITED STATES.

Below is given a brief description of every college in the United States that is legally chartered to confer the degree of doctor of medicine and whose diploma is recognized by at least one state licensing board. The list includes the sectarian as well as the regular colleges, as their graduates are physicians in the eyes of the law. The order in which the colleges are placed is according to date of organization, grouped in cities. The information given is, as a rule, obtained from the catalogs and has been submitted to the dean of each school for his inspection and approval. Colleges which belong to the Southern Medical College Association or the Association of American Medical Colleges have requirements for admission of students according to the rules of these Associations, unless their requirements are higher, in which case a statement is made to that effect. Extracts from these rules are given at the close of the list of colleges.

ALABAMA.

Alabama, population 1,828,697, has two medical colleges, the Medical College of Alabama and the Birmingham Medical College.

Mobile.

MEDICAL COLLEGE OF ALABAMA.—This is the Medical Department of the University of Alabama, and was organized in 1859. It is located in Mobile, a city of 38,469 inhabitants. The City Hospital furnishes free clinical material. The faculty consists of 9 professors and 17 lecturers, 26 in all. It is well equipped with buildings, laboratories, dispensary, etc. It is a member of the Southern Medical College Association. The course of study is graded and covers four years of six months each. The total fees for each of the first three years is $100; for the fourth year, $125. Board and lodging, $3.50 to $5 per week. The Dean is Dr. George E. Ketchum, Mobile, Ala. Total registration, 1901-1902, 136; number of graduates, 13. The thirty-seventh session will begin Oct. 7, 1902, and will close April, 1903.

Birmingham.

BIRMINGHAM MEDICAL COLLEGE.—This school was incorporated in 1894 and is situated in Birmingham, a manufacturing town of 38,415. The clinical advantages are good. The Hillman, St. Vincent's, Pratt and County hospitals are accessible to the students. The clinical, histological and pathological laboratories are well equipped. There are 12 professors and 8 lecturers; total, 20. The school is a member of the Southern Medical College Association. The course of instruction is a graded one and embraces four separate sessions of six months each. The fees are $75 for each of the first three years and $105 for the fourth. Good board can be obtained at from $12 to $20 per month. The Dean is Dr. B. L. Wyman, Birmingham. Number of students registered last session, 82; number of graduates, 8. Next session opens Oct. 1, 1902, and closes April 1, 1903.

ARKANSAS.

Arkansas, population 1,311,564, has one medical college.

Little Rock.

MEDICAL DEPARTMENT OF THE ARKANSAS UNIVERSITY.—This college is located at Little Rock, population 54,587. It was organized twenty-three years ago as the Arkansas Industrial University Medical Department. It is a charter member of the Association of American Medical Colleges. Hospital facilities are furnished by Logan H. Roots Memorial Hospital, St. Vincent's Infirmary and Pulaski County Hospital, the latter having a capacity of 200 beds. The teaching body consists of 23 besides assistants, Dr. F. L. French, Little Rock, being Secretary of the faculty. The fees are: Matriculation $5, paid but once; annual fees $60, and graduation $25. Board and lodging costs from $13 to $18 per month. Total number of students at last session, 220; graduates, 11. The next course of lectures begins Oct. 20, 1902, and ends April 11, 1903.

CALIFORNIA.

California, population 1,485,053, has eight medical colleges. Six are located in San Francisco, a city of 342,782 inhabitants. They are Cooper Medical College, Medical Department of the University of California, California Medical College, Hahnemann Medical College of the Pacific, West Coast Medical College, and the College of Physicians and Surgeons. The clinical facilities of San Francisco are good; board and lodging can be obtained for from $20 to $30 a month. The College of Medicine of the University of Southern California is situated in Los Angeles, population 102,479. Board and lodging can be obtained in that city for $4 a week and upwards. The Oakland College of Medicine and Surgery is in Oakland, a suburb of San Francisco.

San Francisco.

COOPER MEDICAL COLLEGE.—This school was organized in 1858, though its present name was not adopted until 1882. The faculty consists of 11 professors and 20 lecturers and demonstrators, 35 in all. Lane Hospital, adjoining the college; the City and County Hospital, containing 464 beds, and the college dispensary furnish clinical material. The requirements for admission are a certificate showing that applicant has passed the regular examination for admission to Stanford University or University of California, or other university having an equivalent standard, graduation from an accredited high school or academy, or graduation from California State Normal School. The college building supplies large laboratory and lecture-room facilities. The curriculum covers a graded course of four years of eight months each. Fees: First year, $115; second, $110; third, $100, and $125 for the fourth year. The Dean is Dr. Henry Gibbons, Jr., 920 Polk St., San Francisco. Total registration for 1901-2 was 214; graduates, 25. The present session opened Aug. 15, 1902, and will close April 28, 1903.

MEDICAL DEPARTMENT UNIVERSITY OF CALIFORNIA.—This department of the State University was organized in 1872, and has a faculty composed of 17 professors, 6 associates and lecturers, 41 instructors and assistants, a total of 64. The City and County Hospital, which admits students of this school not only to the clinics proper, but also to its wards for study, and the college dispensary furnish good clinical material. The senior class is divided into sections of six students each and bedside instruction is given them five days a week. Practical laboratory examinations are required of the students in the laboratories of the hospital, and practical obstetric demonstrations are given at the bedside. The building is commodious and furnishes good laboratory and lecture-room space. The course covers graded work for four years of eight months each. This school is a member of the Association of American Medical Colleges. The total fees for the first year are $115; second, $110; third, $100, and $125 for the four year. The Dean is Dr. Arnold A. D'Ancona, San Francisco. Total registration for 1901-2 was 151; graduates, 24. The thirtieth session opened Aug. 18, 1902, and will close May 18, 1903.

CALIFORNIA MEDICAL COLLEGE.—Eclectic. This school was organized in 1878. Its faculty includes 14 professors, 8 lecturers and 6 instructors, a total of 28. The clinical material is supplied by the Buena Vista and City and County hospitals. Applicants for admission not holding diploma or certificate are examined. The course has been extended to cover four years of eight months each. Total fees are about $110 for each of the first three years and $40 for the fourth year. The Dean is Dr. D. Maclean. Total registration for 1901-2 was 84; graduates, 6. The next session opens Oct. 6, 1902, and closes June 17, 1903.

HAHNEMANN MEDICAL COLLEGE OF THE PACIFIC.—Homeopathic. This was organized in 1884, and has a faculty of 17 professors, and 21 lecturers, instructors, etc., in all 38. The Pacific Homeopathic Polyclinic, the Homeopathic Sanatorium and the San Francisco Nursery for Homeless Children and Marie Kip Orphanage, accommodating, respectively, 45, 75 and 120 beds; Fabiola Hospital, and the City and County Hospital, furnish a clinical material for study. Matriculants must possess a knowledge of English composition, arithmetic, geography, history and Latin, as evidenced by certificate or examination. One year after entrance is permitted in which the student may prepare himself in Latin. The course includes four years of seven months each. Total fees for the first year, $150, and $100 for each of the other three years. The Dean is Dr. James W. Ward, 606 Sutter St. Total registration for 1901-2 was 45; graduates, 8. The twentieth session opened March 6, 1902, and will close Oct. 31, 1902.

COLLEGE OF PHYSICIANS AND SURGEONS OF SAN FRANCISCO.—This school was organized in 1896 and has a faculty of 24 professors and 26 associate professors and teachers. The hospital facilities consist of the City and County Hospital, where the college has 3 wards available for bedside instruction; the California General Hospital with 50 beds, owned and controlled by the college trustees, and St. Winifred Hospital with 50 beds, where clinical instruction is given in abdominal surgery and gynecology. The daily clinics at the new college building furnish abundant material of every description. Applicants for matriculation must show an equal amount of work done or pass a satisfactory examination in English, history and government, geography, physics, mathematics and Latin, grammar and translation. The college building recently completed is well supplied with laboratories and lecture rooms. This college now conducts a continuous course of medical instruction. Each year is divided into four quarters of three months each, and known as the autumn, winter, spring and summer quarters. Students may enter at the beginning of any quarter. Attendance on 12 quarters will be required and at least 45 months must elapse between the beginning of the first course and the time of graduation. Fees, $30 per quarter. The Dean is Dr. D. A. Hodghead, 1025 Sutter street. Registration for 1901 was 180, of these 41 graduated in medicine. The autumn quarter opened Sept. 2, 1902, and closes May, 1903.

WEST COAST MEDICAL COLLEGE.—This school is the successor of the Pacific Coast Regular College of Medicine. The Dean, Dr. C. W. W. von Tiedemann, 818 Howard St., writes that the enrolment for 1901-2 was 122, the course is five years, the degree of A.B. is required for entrance.

Oakland.

OAKLAND COLLEGE OF MEDICINE AND SURGERY.—This new school will open this fall. The Registrar is Dr. R. T. Stratton. The faculty numbers 21. Tuition is about $115 yearly. The session opens Sept. 15, 1902, and ends May 16, 1903.

Los Angeles.

COLLEGE OF MEDICINE, UNIVERSITY OF SOUTHERN CALIFORNIA.—This school was organized in 1885, and has a faculty of 27 professors and 7 instructors, etc., 34 in all. The County Hospital, having 200 beds, and a college dispensary furnish clinical material. Applicants for admission are required to pass an examination in English, arithmetic, elementary algebra, physics and Latin equal to one year's work, unless they can show by certificate that they have covered that ground. The building is amply provided with laboratories and lecture rooms. A graded course, covering four years of thirty-two weeks each, is offered. The total fees for the first year are $145; second and third, $130 each, and $40 for the fourth year. The Dean is Dr. James H. McBride, Potomac Block, Los Angeles. Total registration for 1901-2 was 102; graduates, 14. The next session opens October 16, 1902, and closes June 10, 1903.

COLORADO.

Colorado, with a population of 539,700, has three medical colleges. Two of these are in Denver, which has a population of 133,859: Denver—Gross Medical College and Denver Homeopathic College; the other, the Colorado School of Medicine, is at Boulder (population 6150). The clinical facilities in Denver available to the two colleges are the Arapahoe County Hospital, which has a capacity of 225 beds; St. Joseph's Hospital, with 200 beds, and St. Luke's Hospital, with 75 beds. The Public Library contains 10,000 volumes on medicine. Board can be obtained in Denver for $5 a week and upward.

Denver.

THE DENVER AND GROSS COLLEGE OF MEDICINE.—This is the Medical Department of the University of Denver, and was organized this year by the union of the Gross Medical College (organized 1887) and the Denver College of Medicine (organized 1880). The clinical advantages are the college dispensary, the Arapahoe County Hospital, St. Luke's Hospital, St. Anthony's Hospital, St. Joseph's Hospital, National Jewish Hospital for Consumptives, Home for Dependent Children and the City Contagious Hospital and Mercy Sanitarium. The faculty is made up of 39 professors, 11 clinical and associate professors and 41 instructors, and other assistants, a total of 91. Its location is central and the buildings are well arranged for laboratory, dispensary and didactic work. The course is graded and covers four years of eight months. The college is a member of the Association of American Medical Colleges. Final examinations at the end of each year are held. Fees for the first year are $115. For the second year $116. Third year $101. Fourth year $126. Total registration 1901-2: Denver College of Medicine, 60; Gross Medical College, 73. Graduates Denver College of Medicine, 11; Gross Medical College, 24. The twenty-second session will begin Sept. 16, 1902, and close May 16, 1903. The Dean is Dr. G. Bonney.

DENVER HOMEOPATHIC COLLEGE.—This college, organized in 1894, besides the Arapahoe County Hospital, has exclusive privileges for clinical work in the Denver Homeopathic Hospital, the Haven and the Belle Lenox Nursery. The faculty numbers 23 professors and 9 lecturers and instructors, 32 in all. The requirements for admission are, "possession of a diploma from a literary college, university, an academy, a normal or high school; a first grade teacher's certificate, or a previous matriculation at some reputable literary or medical college." The course of study consists of four years of seven months each; monthly examinations are held in each subject. A five-year scholarship may be had for $300, payable in advance, otherwise the tuition is $100 a year; there is a matriculation fee of $5, payable once. The Dean is Dr. James P. Willard, Masonic Temple, Denver. Total registration for 1901-2 was 34; the number of graduates, 10. The ninth session begins Sept. 17, 1902, and will close April, 1903.

Boulder.

COLORADO SCHOOL OF MEDICINE.—This is the Medical Department of the University of Colorado, and was opened in 1883. The University Hospital, under the control of the state, is equipped to accommodate 40 patients and furnishes free clinical material. Both hospital and dispensary clinics are offered and the sanatorium located in Boulder offers additional advantages in this line. The faculty embraces 15 professors and 10 lecturers and assistants, a total of 25. The laboratories are well equipped and commodious. A separate building is devoted to the study of anatomy and another one is used for medical work exclusively. A complete four-year course of study in a recognized high school, or its equivalent, is required for admission. This school is a member of the Association of American Medical Colleges. The work embraces a graded course of four years of nine months each. The tuition is $50 per year; there are no other fees. The Dean is Dr. Luman M. Giffin, Boulder. Total registration for 1901-2 was 63; graduates, 13. Twenty-first session begins Sept. 8, 1902, and closes June, 1903.

CONNECTICUT.

Connecticut has a population of 908,420, and contains one medical college.

New Haven.

YALE MEDICAL SCHOOL.—This is the Department of Medicine of Yale University, and is located in New Haven, a good railroad and manufacturing city of 115,000 people. In 1810 a charter was granted for the establishment of this school, and in 1813 it was organized as the Medical Institution of Yale College. In 1879 a new charter changed the name to the one now used, and in 1884 the Connecticut Medical Society, which from the granting of the first charter had taken an active part in its control, released itself from a further responsibility and the University authorities assumed full control. The clinical advantages are embraced under the New Haven Hospital, which contains 150 beds and is the general hospital for New Haven; the Springside Hospital, which is connected with the city almshouse, and the State Hospital for the Insane, which, with its 1800 patients, offers an opportunity for special instruction in insanity in addition to the clinics. Besides these, the University has just completed a $100,000 building for the dispensary service which offers good material for clinical teaching. The faculty embraces 13 professors, 5 lecturers, 12 instructors, and 22 assistants, a total of 51. The lecture rooms and laboratories are large and well equipped. Matriculants are admitted without examination, provided that they have received a degree in arts or sciences, that they present certificates showing that they have successfully prosecuted the subjects of the examination at some college, high school, academy, or preparatory school approved by the faculty, or that they have passed matriculation examinations equivalent to those required, at some approved professional school. This school is a member of the Association of American Medical Colleges. The course covers a four-year graded curriculum, eight months constituting a school year; the first two years the fundamental branches are studied, the third year is devoted to a systematic teaching of medicine, surgery, obstetrics and pharmacology, and in the fourth year clinical work, with medicine, surgery and the specialties, is presented. The fees are $150 each year: in the first year there are additional fees amounting to $18, and in the second, $8, and there is a graduation fee of $10. Board and lodging in New Haven can be obtained for $4.50 and upwards. The Dean is Dr. Herbert E. Smith, New Haven. During the session of 1901-2 there were 145 matriculants and 20 graduates. The eighty-ninth session opens Oct. 2, 1902, and closes June 24, 1903.

DISTRICT OF COLUMBIA.

Washington, population 278,718, offers to the student of medicine many advantages. The Army Medical Museum, the Museum of Hygiene, the National Museum, the library in the Surgeon-General's office, the Toner Medical Library and Museum of Hygiene, in all over 125,000 volumes on medicine, open to the medical student a most profitable field. The clinical advantages offered by the various hospitals are good. Owing to the many boarding houses and hotels, board and lodging can be had at extremely reasonable rates. The medical schools are four and are as follows:

Washington.

MEDICAL SCHOOL OF COLUMBIAN UNIVERSITY.—This school was organized in 1821 as the Medical Department of Columbian College, which in 1873 became Columbian University. Besides University Hospital, under the immediate control of the faculty and giving the students of this school exclusive clinical advantages, the Garfield Hospital, the Children's Hospital, Central Dispensary and Emergency Hospital, the Providence Hospital, the Lutheran Eye and Ear Infirmary, the Episcopal, Columbia and the St. Elizabeth's hospitals, all permit of abundant opportunity for clinics and clinical material. The faculty is composed of 29 professors, and 23 demonstrators and assistants, 52 in all. This school is a member of the Association of American Medical Colleges. The equipment and facilities for laboratory, didactic and clinical work are good. The completion of graded work covering the period of four years, eight months to the school year, is required; semi-annual examinations are held. Total fees for each year are $110. The Dean is Dr. E. A. de Schweinitz, 1325 H. St., N. W., Washington. New and enlarged buildings for both college and hospital will be completed by the opening of the next term. For the school year 1901-2 the total registration was 257; the graduates were 26. The eighty-first session begins Oct. 1, 1902, and closes June 1, 1903.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE.—This school, organized in 1850, controls the Georgetown University Hospital, which affords excellent facilities for clinical teaching and ward classes. Clinics are also held for the benefit of the students in Providence Hospital, containing 300 beds; in the Children's Hospital, the Central Dispensary, Emergency Hospital and the Garfield Hospital. Attendance on clinical instruction is obligatory in the third and fourth years. The faculty contains 28 professors, 27 instructors and assistants, total 55. This school is a member of the Association of American Medical Colleges. The building is conveniently located and contains spacious and well-ventilated lecture rooms, laboratories and library; the laboratories are equipped with the most approved instruments and appliances. The complete course of study extends over four terms of eight months each. Examinations are held at the end of each session. The fees for the first, second and third years are $105 each, and for the last year, $100; a fee is charged for the material used in practical anatomy and operative surgery. The Dean is Dr. George M. Kober, 1600 T St. The total registration for the session 1901-2 was 130; graduates, 13. The next term opens Sept. 29, 1902, and ends May 31, 1903.

HOWARD UNIVERSITY MEDICAL DEPARTMENT.—This institution was organized in 1867 and "in conformity with the spirit of the organic law of the University, is open to all, without regard to sex or race, who are qualified by good moral character, proper age and suitable education." The removal of any racial distinction has been taken advantage of by colored students, who compose a majority of those in attendance, but a number of white students are also receiving instruction. The Freedmen's Hospital and Asylum is a general hospital of 300 beds. The faculty comprises 15 professors, and 10 lecturers and assistants, 25 in all. This college is a member of the Association of American Medical Colleges. Students are required to attend four courses of lectures in separate years of seven months each. The fees of each session are $80, plus $2 per part for dissecting material. Board can be had at the school dining hall for $9 a month, and a room in the dormitory for $15 a term. The Dean is Dr. Robert Reyburn, 714 13th St. N. W., Washington. Total registration for the year 1901-2 was 145; graduates, 27. The thirty-fifth session begins Oct. 1, 1902, and closes May, 1903.

NATIONAL UNIVERSITY MEDICAL DEPARTMENT.—This school, organized in 1884, is a member of the Association of American Medical Colleges, and has a faculty of 37. Clinical facilities are obtained at the Providence, Garfield and Episcopal hospitals, the Eastern and Presbyterian dispensaries and the Home for Incurables. Instruction is given by lectures, recitations, clinical teaching and practical laboratory work. Oral examinations are held

each week and final examinations, both oral and written, at the end of each lecture term. The course consists of graded work for four years of eight months each. The total fees for each year are $100, except the first, when an additional fee of $5 is charged. The Dean is Dr. H. H. Barker, 1116 H St. N. W. Total registration for 1901-2 was 37; graduates, 9. The nineteenth session will begin Oct. 6, 1902, and will extend to May 31, 1903.

GEORGIA.

Georgia, population 2,216,331, has three medical colleges: Medical College of Georgia, located in Augusta (population, 39,441); Atlanta College of Physicians and Surgeons and Georgia College of Eclectic Medicine and Surgery, both in Atlanta (a manufacturing city of 89,872 population).

Augusta.

MEDICAL COLLEGE OF GEORGIA.—This school was organized as a medical academy in 1829, and in 1873 was made the Medical Department of the University of Georgia. Its faculty includes 15 professors and 5 assistants, 20 in all. All students who entered on their first course after Sept. 30, 1900, must attend four sessions of six months each. Applicants for admission must, by examination, certificate or diploma, show that they possess an education equal to that required for second grade teachers in public schools; if they are deficient on examination, however, they are admitted and they may remove the condition any time before they appear for graduation. The City Hospital, with 130 beds; Lamar Hospital, with 80; the Polyclinic and the Hospital for Contagious Diseases supply clinical material. Total fees for first two years are $100 each; third year, $90, and $120 for the last year. Board and lodging can be procured for from $3 to $5 a week. The Dean is Dr. Eugene Foster, Augusta. Total enrolment for 1901-2 was 121; graduates, 47. The seventy-first session opens Oct. 1, 1902, and closes April, 1903.

Atlanta.

ATLANTA COLLEGE OF PHYSICIANS AND SURGEONS.—This school was formed in 1898 by the consolidation of the Atlanta Medical College, organized in 1854, with the Southern Medical College, organized in 1879. It has a faculty of 14 professors and an adjunct faculty of 14, a total of 28. Clinical facilities are furnished by the Grady Hospital, which is the general hospital for Atlanta; clinics are free to the graduating class. First course students are required to "give satisfactory evidence to the faculty of such educational qualifications as will be deemed necessary for the successful prosecution of their medical studies. These requirements will be similar to those of other reputable medical colleges in the country." The course of study covers four years of six months each and is graded. The buildings are large and a new building for practical anatomy has just been added. Fees: First and second years, $75 each; third and fourth, $100 each. Board and room can be obtained for from $3 to $4 per week. The Dean is Dr. W. S. Kendrick, 71 Washington St., Atlanta. Total registration of students for 1901-2 was 257; graduates, 111. Next session begins Oct. 1, 1902, and closes April 4, 1903.

GEORGIA COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—This was organized in 1886, and has a faculty of 11 professors and 1 demonstrator. The college dispensary and Grady Hospital furnish clinical material. Applicants for admission must adhere to the requirements established by the National Confederation of Eclectic Colleges, of which this college is a member. The curriculum covers four years of six months each. The Proctor is W. M. Durham, M.D., 77½ Peachtree St., Atlanta. Total number of students for 1901-2 was 58; graduates, 21. The next session opens Oct. 1, 1902, and closes April 1, 1903.

ILLINOIS.

Illinois, population 4,821,550, has fifteen medical colleges. They are all located in Chicago, a city with 1,698,575 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, Hahnemann Medical College, Bennett College of Eclectic Medicine and Surgery, Chicago Homeopathic Medical College, College of Physicians and Surgeons, Hering Medical College, Jenner Medical College, Harvey Medical College, Illinois Medical College, Dunham Medical College, American Medical Missionary College, College of Medicine and Surgery, National Medical University and Chicago Eclectic College. Room and board can be obtained for from $2.50 a week upwards.

Chicago.

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the Medical Department of Lake Forest University from 1887 to 1898, and in the latter year became affiliated with the University of Chicago. The faculty is composed of 26 professors, 31 associate and assistant professors, and 137 instructors, assistants, etc., a total of 194. Good clinical facilities are furnished by Cook County Hospital, caring for about 20,000 patients yearly; Presbyterian Hospital, with 250 beds; a college dispensary, and an obstetric department. In addition to these, extramural clinical courses are offered at the West Side Hebrew Dispensary, St. Luke's Hospital, St. Anthony's Hospital, The Alexian Brothers' Hospital, Illinois Charitable Eye and Ear Infirmary and Chicago Isolation Hospital. Bedside instruction is given. The requirements for admission are those of admission to the better universities or colleges and, in addition thereto, one year of college work. For the sessions of 1903 there will be required a certificate of admission to the second academic year of an accredited university, and for 1904-5 to the third year. By the addition of a recently completed seven-story building, the facilities for clinical instructions are largely increased. The laboratories and their equipment are unexcelled. The curriculum covers graded work for four years of three quarters each, a quarter being three months. A continuous session is held, but credit for more than three quarters can not be obtained in any calendar year. A combined course for six years confers degrees of both science and medicine. All freshmen and sophomore studies are given at the University of Chicago. The total regular fees are $165 this year, but it is designed to gradually increase the fees to $200 per year. However, students in continuous attendance, i. e., three quarters in twelve months, may complete their course by paying the fees in vogue when they first enter the college. A matriculation fee of $5 is paid but once, and there are incidentals amounting to from $2 to $5 annually. The Deans are Dr. Frank Billings, 100 State St., and Dr. John M. Dodson, 34 Washington St., Chicago. Total registration 1901-2 was 803; graduates, 211. The fiscal year begins July 1; final examinations are held at the end of each quarter for those who have completed their work.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL.—This school was organized in 1859 as the Medical Department of Lind University, became independent as the Chicago Medical College in 1864, and in 1869 assumed its present relation as Medical Department of Northwestern University. The faculty comprises 33 professors, 6 associates and assistants, and 54 instructors, demonstrators, etc., in all, 93. The newly completed Wesley Hospital, with 225 beds; Mercy Hospital, containing 400 beds; Provident Hospital, having 100 beds, and a college free dispensary furnish opportunities for clinical study to students of this college exclusively. St. Luke's, Cook County, and the Chicago Lying-in hospitals are also open to them for study. Applicants for admission must, by diploma, certificate or examination, show possession of the educational acquirements required to enter the College of Liberal Arts of Northwestern University. This school is a member of the Association of American Medical Colleges. The laboratory and lecture-room facilities are ample and the equipment is good. The course of study covers graded work for four years of thirty-six weeks each. Final examinations are held at the end of each semester. The fees for each year are $135 and a matriculation fee of $5, paid once, is charged. The Dean is Dr. N. S. Davis, Jr., 65 Randolph St., Chicago. The total registration for 1901-2 was 465; graduates, 96. The next session opens Oct. 7, 1902, and closes June 18, 1903.

HAHNEMANN MEDICAL COLLEGE.—Homeopathic. This was organized in 1851, and has a faculty of 52. Hahnemann Hospital and a college dispensary supply clinical material. The requirements for admission are sufficient knowledge of English, arithmetic, geography, algebra, physics, United States history and Latin. The course is four years of seven months each. Fees: Matriculation, paid once, $5; each term, $50, and hospital tickets, $5 each for third and fourth years. The Dean is Dr. E. Stillman Bailey, Marshall Field Bldg. Total registration, 1901-2, was 185; graduates, 47. The next session begins Oct. 1, 1902, and ends May 7, 1903.

BENNETT COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—This school, organized in 1868, has a faculty of 26 professors and 13 assistants, 39 in all. The Bennett, Cook County and Baptist hospitals and a college dispensary supply clinical facilities. Matriculants must present a diploma or certificate or pass a satisfactory examination "in conformity with the minimum requirements of the State Board of Health." The course covers four years of twenty-six weeks each. This school is a member of the National Confederation of Eclectic Medical Colleges. Fees for each year are $100, with a matriculation fee, paid once, of $5. The Dean is Dr. A. L. Clark, Elgin, Ill. Total registration, 1901-2, was 104; graduates, 21. The thirty-fifth session begins Sept. 23, 1902, and ends May 13, 1903.

CHICAGO HOMEOPATHIC MEDICAL COLLEGE.—This was organized in 1876, and has a faculty of 19 professors and 49 adjuncts, lecturers, etc., a total of 68. The Chicago Homeopathic and Cook County hospitals, together with a college dispensary, furnish clinical material. Applicants for admission must show by certificate from high school, or its equivalent, a sufficient knowledge of English, arithmetic, algebra, physics, United States history, geography, botany, and Latin equivalent to a year's study. The course covers four years of seven and one-half months each. Total fees are about $110 for each year. The Dean is Dr. W. M. Stearns, Marshall Field Bldg. Total registration, 1901-2, was 130; graduates, 35. The next session opens Sept. 16, 1902, and ends April 28, 1903.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1882 and in 1896 became the Medical Department of the University of Illinois. The faculty is composed of 39 professors, 38 adjuncts and clinical professors and 38 instructors, etc., a total of 115. The West Side Hospital, containing 125 beds; Cook County Hospital, and a college dispensary and maternity clinic supply most of the clinical material, but under certain conditions students of this school are admitted to the following hospitals for clinical study: Augustana Baptist, Chicago Woman's, Samaritan, Alexian Brothers', St. Mary's, and the Chicago Lying-in. This school is a member of the Association of American Medical Colleges. A magnificent building has recently been added to the college, and the laboratory, amphitheater and lecture-room space and equipment are excellent. The collegiate year is divided into two terms: the winter term of thirty-two weeks and the summer term of twelve weeks, of actual teaching. Attendance on the winter term is required in order to secure credit for a year's work, and attendance on four winter terms is required for graduation, except for students who are admitted to advanced standing. Attendance on the summer term is optional, and the work is supplementary to the work of the winter term. Students may obtain credit for work done in certain branches, but attendance on this term does not apply on the required thirty-two months' attendance necessary for graduation. The fees are $130 each for the first two years, $115 for the third and $125 for the fourth year. The Dean is Dr. William E. Quine, 103 State St. Total registration for 1901-2 was 692; graduates, 220. The fall term begins Oct. 1, 1902.

HERING MEDICAL COLLEGE.—Homeopathic. This school was organized in 1892. The faculty comprises 25 professors and 14 associates, lecturers, etc., in all 39. Hering College Hospital, National Temperance and Cook County hospitals supply clinical facilities. The course covers four years of seven months each. The total fees for a full course are $300 if paid in advance, or $100 per year. The Dean is Dr. H. C. Allen, 5142 Washington Ave. Total registration for 1901-2, was 72; graduates, 13. The eleventh session begins Sept. 9, 1902, and ends April 11, 1903.

JENNER MEDICAL COLLEGE.—This is a day and evening school, organized in 1892. The faculty consists of 28 professors and 7 assistants, 35 in all. Cook County Hospital and college dispensary supply clinical material, and the new Union Stock Yards Hospital will soon add to the facilities for clinical work. This college belongs to the Association of American Medical Colleges. The course covers four years of 44 weeks each and embraces laboratory, didactic and clinical instruction. The total fees each year are $100, with a $5 matriculation fee, paid but once. The Secretary is Dr. A. Loewy, 196 Washington St. Total enrolment for 1901-2 was 105; graduates, 18. The present session began Sept. 2, 1902, and will end June 30, 1903.

HARVEY MEDICAL COLLEGE.—This is a night school, organized in the Chicago Atheneum in 1891 and reorganized in 1894. The lecture and laboratory work is all in the evening between the hours of 7 and 10, six days of the week and forty weeks of the year. The clinical work: hospital, dispensary, in-practice and out-practice, are between the hours of 10 a. m. and 10 p. m. Attendance on 100 clinical hours yearly before 7 in the evening is obligatory besides attendance by the seniors on night obstetric cases and Saturday evening clinic at Cook County Hospital. The faculty is composed of 42 professors, 21 instructors and assistants, total, 63. The course covers four years of ten months each. The requirements for admission are those of the Association of American Medical Colleges. The total fees for first three years are about $125 each, and for the fourth year, $150. The Dean is Dr. Francis Dickinson. Total registration for 1901-2 was 307; graduates, 28. The twelfth session began Sept 2, 1902, and ends June 27, 1903.

ILLINOIS MEDICAL COLLEGE.—This school, organized in 1894, has a faculty of 24 professors and 19 assistants, a total of 43. A college dispensary and Cook County Hospital are available for clinical study. The requirements for admission are based on those of the Association of American Medical Colleges, and include a high school diploma or its equivalent. The college is a member of the Association of American Medical Colleges. A continuous course consisting of four terms to the calendar year is offered, two terms of three months each constituting a college year. Four collegiate years are necessary for graduation, and forty-two months must elapse between that time and matriculation. Total fees are about $75 for each year. The Dean is Dr. B. B. Eads, 103 State St. Total registration for 1901-2 was 228; graduates, 21. The next fall term begins Oct. 1, 1902.

DUNHAM MEDICAL COLLEGE.—Homeopathic. This was organized in 1895 and has a faculty of 31 professors and lecturers. Cook County Hospital, St. Anthony's Hospital and a college dispensary supply the clinical facilities. Four years' work of seven months each is required for graduation. The fees are about $100 for each year. The Dean is Dr. James T. Kent, 92 State St. Total registration for 1901-2 was 82; graduates, 19. The twelfth session begins Sept. 23, 1902, and ends April 28, 1903.

AMERICAN MEDICAL MISSIONARY COLLEGE.—This school was organized in 1895 and has the primal object of educating men and women as missionary physicians. The faculty numbers 25. The didactics and laboratory work, covering the first two years, is carried on at Battle Creek, Mich., and the clinical studies in Chicago. A hospital with 20 beds, in connection with the college, together with a free college dispensary, with an obstetric department, supply material for practical work. The requirements are based on those of the Association of American Medical Colleges. The course covers four years of nine months each. Total fees are $125 for each of the four years. The Secretary is Dr. E. L. Eggleston, Battle Creek, Mich. Total registration for 1901-2 was 92; graduates, 24. The eighth session opens Sept. 24, 1902, and closes June 23, 1903.

COLLEGE OF MEDICINE AND SURGERY.—Physio-Medical. This school was organized in 1896 and has a faculty of 31 teachers. A college dispensary supplies material for clinical work. The course covers four years of seven months each. Fees for the first year, $100; for the second and third, $95 each, and $110 for the fourth. The Dean is Dr. H. P. Nelson, 631 Jackson Blvd. Total registration for 1901-2 was 40; graduates, 9. The next session begins Sept. 26, 1902, and ends April 27, 1903.

NATIONAL MEDICAL UNIVERSITY.—This was organized in 1891, and its courses include instruction in the methods of all the so-called schools of practice. The faculty numbers 54. The requirements for entrance are a high school diploma or examination in accordance with the requirements of the Illinois State Board of Health. A 4-year course of 6 months each has been required, but 9 months are now necessary in each year, and after 1902, 5 years of 9 months each will be necessary for graduation, the fifth year being spent in the hospital. Each year is divided into 4 quarters of 13 weeks each. The fees are $100 per year or $300 for the four if paid in advance. The Registrar is Dr. L. D. Rogers, 533 Wells St. Total matriculants for 1901-2 were 150; graduates, 11. The autumn quarter will begin October 1.

AMERICAN COLLEGE OF MEDICINE AND SURGERY.—Eclectic. This school was founded in 1901 and has now purchased the buildings of the Northwestern University Woman's Medical School, which passed out of being this year. It has a faculty of 50. The requirements for entrance are in accord with the rules of the State Board of Health. The course is four years of eight months each. American and Cook County hospitals supply clinical material. The Secretary is Dr. J. D. Robertson, 103 State St. The enrolment, 1901-2, was 36. The next session begins Oct. 1, 1902, and closes May 15, 1903.

INDIANA.

Indiana, population 2,516,462, has five medical colleges. Four are situated in Indianapolis, a city of 169,164 people: The Physio-Medical College, Central Medical College of Indiana, Central College of Physicians and Surgeons, and the Eclectic Medical College. The clinical facilities of Indianapolis are good and board and lodging can be obtained from $2.50 a week upwards. The Fort Wayne College of Medicine is situated in Fort Wayne, a railroad and manufacturing town of 45,115 inhabitants. Board and room can be obtained there at an average of $3 a week.

Indianapolis.

PHYSIO-MEDICAL COLLEGE.—This school was organized in 1873, and has a faculty of 29. The course is four years of 26 weeks each. Total fees for each year are $70. The Secretary is Dr C. T. Bedford, Indianapolis. Total enrolment, 1901-2, was 31; graduates, 4. The next session begins Oct. 7, 1902, and closes April 7, 1903.

MEDICAL COLLEGE OF INDIANA.—This is the Medical Department of the University of Indianapolis and was organized in 1869. The faculty embraces 25 professors and 39 adjuncts, lecturers, etc., a total of 64. The City Hospital, containing 200 beds; Indianapolis Dispensary, Central Hospital for the Insane, with a capacity for 1800 patients; St. Vincent's and the Maternity hospitals, and a college dispensary provide clinical facilities; the wards in the charity hospitals are open to students of this college for bedside instruction. The laboratory and lecture-room space is ample. This college is a member of the Association of American Medical Colleges. The course extends over four years of seven months each. Fees: first and second years, $80 each; third, $75, and $100 for the fourth year, which includes graduation fee. The Dean is Dr. Henry Jameson, Newton-Claypool Bldg., Indianapolis. Total enrolment for 1901-2 was 311; graduates, 75. The thirty-third session opens Sept. 23, 1902, and closes April 23, 1903.

CENTRAL COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1879 and reorganized in 1901, at which time its faculty was greatly enlarged, now numbering 23 professors, 50 lecturers and demonstrators, total 73. A new college building has been erected on the most up-to-date plans. Its floor space comprises 25,000 square feet, more than half of which is devoted to laboratory teaching. The school gives instruction largely by laboratory and clinical methods. Clinical facilities are furnished by a dispensary maintained by the college, by the City Dispensary, City Hospital, St. Vincent's Infirmary and the Central Hospital for the Insane. This college was a charter member of the Association of American Medical Colleges. The course is four years of 6 months each. The Dean is Dr. Allison Maxwell. The fees are $75 for each year of the four years' course. The session for 1902-3 will open Oct. 2, 1902. Total registration 1901-2 was 70; graduates, 8.

ECLECTIC MEDICAL COLLEGE.—This school was organized in 1889. It has a teaching force of 31. The requirements for admission are those of the National Confederation of Eclectic Medical Colleges. The catalogue shows a four-year course of six months each. Fees: For each year, $75, or for all four, $225; $25 for graduation. Total registration, 1901-2, 25. The next session begins Sept. 23, 1902, and ends April 11, 1903. The Dean is Dr. R. T. Laycock, 909 Bates St.

Fort Wayne.

FORT WAYNE COLLEGE OF MEDICINE.—This school was organized in 1879, has a faculty of 25 professors and 8 lecturers and assistants, a total of 33. St. Joseph's Hospital, with a capacity of 250 patients; Hope Hospital, with 200 beds; St. Roche's Hospital, having accommodation for 35 patients; Indiana School for Feeble-Minded Youth and Allen County Orphan Asylum, capable of holding 150 children, supply the clinical facilities. This school is a member of the Association of American Medical Colleges. The curriculum covers four years of seven months each. The course is practical, supplemented by lectures and laboratory work. The total fees for each year are $75, with an additional $5 matriculation fee, payable once. The Dean is Dr. C. B. Stemen, 25 Broadway. Total number of students registered 1901-2 was 46; graduates, 9. The present session opens September 10, 1902, and closes April 21, 1903.

IOWA.

Iowa, population 2,231,853, contains five medical colleges. They are: College of Medicine of the State University of Iowa, College of Homeopathic Medicine of the State University of Iowa, Iowa College of Physicians and Surgeons, Sioux City College of Medicine, and Keokuk Medical College, College of Physicians and Surgeons.

Iowa City.

COLLEGE OF MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This is situated in Iowa City, population 7987, and was organized as the Medical Department of the State University in 1870. The faculty is made up of 14 professors, 7 lecturers and 17 demonstrators and assistants, a total of 38. The University Hospital, built in 1897 at a cost of $50,000, supplies abundant clinical material. The school is a member of the Association of American Medical Colleges. The course of study covers four years of thirty-six weeks each, embracing graded laboratory, didactic and clinical work. Combined courses leading to more than one degree are offered. Total fees for each year are $65. Board and lodging costs from $2.50 to $5 per week. The Dean is Dr. James R. Guthrie, Dubuque. Total number of students registered for 1901-2 was 248; graduates, 40. The thirty-third course of lectures opens Sept. 24, 1902, and will end June 17, 1903.

COLLEGE OF HOMEOPATHIC MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This was organized in 1877. The faculty is composed of 10 professors, and 9 lecturers and assistants, a total of 19, but some of these are of the faculty of the College of Medicine. The requirements for admission, and the work, with the exception of that pertaining to homeopathy, are the same as those for the other department. The fees are also the same. The Dean is Dr. George Royal, Des Moines. Total registration for 1901-2 was 59; graduates, 7. The twenty-sixth session begins in September, 1902, and will end in June, 1903.

Des Moines.

THE IOWA COLLEGE OF PHYSICIANS AND SURGEONS.—This is the Medical Department of Drake University and is located in Des Moines, population 62,139. It was organized in 1882. The faculty

contains 17 professors and 6 assistants, a total of 23. Mercy and Methodist hospitals furnish clinical material and attendance on clinics is required the same as on lectures. The requirements for admission are those determined by the Association of American Medical Colleges and the Iowa State Board of Medical Examiners. Instruction is given by means of lectures, recitations, demonstrations, laboratory work and hospital clinics. The work covers a graded course of four years of nine months each. Board and lodging can be obtained for $15 a month. The total fees for the first two years are $80 each, and for the last two years, $75 each. The Dean is Dr. Lewis Schooler, Des Moines. The total registration for the year 1901-2 was 64; graduates, 10. The twenty-first session began Sept. 5, 1902, and will end June 13, 1903.

Sioux City.

SIOUX CITY COLLEGE OF MEDICINE.—This is located in Sioux City, population 33,111, and was organized in 1891. The faculty numbers 15. Clinical material is supplied by St. Joseph's, Mercy and Samaritan hospitals and a college dispensary. This college is a member of the Association of American Medical Colleges. The system of study embraces a four-year graded course, eight months being a school year. Final examinations are held at the close of each course of instruction. Matriculation fee, paid but once, $5; tuition, each year, $48; hospital fee, $5, and graduating fee, $20. The Dean is Dr. H. A. Wheeler. Total number of students registered, 1901-2, was 63; graduates, 10. The thirteenth session opens Sept. 10, 1902, and will close April 20, 1903.

Keokuk.

KEOKUK MEDICAL COLLEGE, COLLEGE OF PHYSICIANS AND SURGEONS.—In 1849 the College of Physicians and Surgeons, Keokuk, was organized and four years later it became the Medical Department of the University of Iowa, continuing as such until 1870, when the original name was resumed. By the union, in 1899, of this college with the Keokuk Medical College, organized in 1890, the present school under the above name was founded. Situated in Keokuk, a town of 14,641 people, and drawing much from the surrounding country, the clinical material is good. St. Joseph's Hospital is open to the student for study and the clinics held there are large and varied. The faculty is composed of 17 professors and 1 demonstrator, 18 in all. This college is a member of the Association of American Medical Colleges. The studies embrace a graded course of four years of seven months each. Board and room can be secured for from $2 to $4 per week. The total fees for the first year are $63; for the second and third, $58 each, and $53 for the last year. The Secretary is Dr. Oliver D. Walker, Keokuk. Total registration for 1901-2 was 247; graduates, 52. The next session begins Sept. 23, 1902, and ends April 28, 1903.

KANSAS.

Kansas, population 1,470,495, has two medical colleges, as follows: Kansas Medical College in Topeka (population 33,608), and the College of Physicians and Surgeons, situated in Kansas City (population 55,000).

Topeka.

KANSAS MEDICAL COLLEGE.—This college, organized in 1890, has a faculty of 27 professors and 6 lecturers and assistants, 33 in all. Good material for both medical and surgical clinics is found in Christ's Hospital, with 100 beds, and Topeka State Hospital; the dispensary, in the down town district, also supplies material for class demonstration. The college is a member of the Association of American Medical Colleges. The college building affords ample laboratory and lecture-room space. The course of study is a graded one covering four years of twenty-six weeks each. Individual instruction is especially aimed at. The total fees for the first two years are $70 each, and $65 each for the last two years. The cost of board and room varies from $2.50 to $4 a week. The Dean is Dr. John E. Minney, Topeka. The total registration for 1901-2 was 99. The thirteenth session begins Sept. 16, 1902, and will close March 27, 1903.

Kansas City.

COLLEGE OF PHYSICIANS AND SURGEONS.—This was organized in 1894 as the Medical Department of Kansas City University. The faculty is made up of 29 professors, 3 lecturers and 5 demonstrators and assistants, a total of 37. Bethany Hospital, with 60 beds; St. Margaret's Hospital, a college dispensary, and an outside obstetric department supply clinical material. Practical demonstration and bedside teaching is emphasized in the work. The requirements for admission are in accordance with the rules of the Association of American Medical Colleges. The course of study is a graded one of four years, seven months each. A scholarship is offered for $175, but taken separately the total fees for the first three years are $60 each, and for the fourth year $50; matriculation fee, $5, payable but once. The Dean is Dr. J. W. May. The total registration of students for 1901-2 was 73; graduates, 27. The ninth session opened Sept. 2, 1902, and will close March 25, 1903.

KENTUCKY.

Kentucky, population 2,147,174, has eight medical colleges. They are all situated in Louisville, a growing city of 204,731 inhabitants, and are as follows:: University of Louisville Medical Department, Kentucky School of Medicine and Hospital, Louisville Medical College, Hospital College of Medicine, Southwestern Homeopathic Medical College, Kentucky University Medical Department, Louisville National Medical College, and Medical Department of State University. Board and lodging can be obtained in Louisville from $2.50 to $4 per week.

Louisville.

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT.—This school was organized in 1837, under the name, Louisville Medical Institute, and in 1846 assumed its present title. It has a faculty of 11 professors, 26 lecturers, demonstrators, etc., a total of 37. The University Hospital, City Hospital, St. Mary's and St. Elizabeth's hospitals, together with the college dispensary, furnish good clinical material. This school is a member of the Association of American Medical Colleges. The course covers graded work for four years of six months each. Total fees: First year, $107; second, $122; third, $105, and fourth, $117. The Dean is Dr. J. M. Bodine, Louisville. Total registration for 1901-2 was 180; graduates, 31. The sixty-sixth session begins Sept. 29, 1902, and ends July 1, 1903.

KENTUCKY SCHOOL OF MEDICINE.—This school was organized in 1850, and has a faculty composed of 12 professors, 10 lecturers and 16 instructors and assistants, a total of 38. The College Hospital, City Hospital and the college dispensary furnish the facilities for clinical study. The student is brought directly into contact with the patient through dispensary and bedside work by dividing the classes into sections. This college is a member of the Association of American Medical Colleges. The laboratories and their equipment are good. The curriculum embraces a four years' course of six and a half months each. The fees for the first two years are $110 each; for the third year, $90, and $80 for the fourth year. The Dean is Dr. W. H. Wathen, 658 Fourth Ave. Total number of students registered for 1901-2 was 295; graduates, 45. The next session begins Jan. 2, 1903, and will end July 1, 1903.

LOUISVILLE MEDICAL COLLEGE.—This school was organized in 1869 and has a faculty of 10 professors and 13 instructors and assistants, 23 in all. The City Hospital, College Infirmary and a dispensary offer good clinical facilities. Applicants for admission must show by diploma, certificate or examination that they are sufficiently proficient in English, arithmetic, algebra, physics and such Latin as would be acquired in one year's study. The laboratories and lecture rooms are ample. The course of study covers four years of six months each. The total fees for each year are $100. The Dean is Dr. C. W. Kelly. Total registration of students for 1901-2 was 219; graduates, 29. The next session opens Sept. 15, 1902, and closes March, 1903.

HOSPITAL COLLEGE OF MEDICINE.—This school is the medical department of Central University of Kentucky and was organized in 1873. The faculty is composed of 9 professors, 9 adjuncts and 23 lecturers, demonstrators, etc., a total of 41. The Gray Street Infirmary, City Hospital and a well-equipped college dispensary present good facilities for clinical study. The requirements for admission are those of the Association of American Medical Colleges. Laboratory work, which is a prominent feature of the course, is thorough and practical. The laboratories and amphitheaters are ample in equipment and capacity, and the hospital advantages give opportunity for personal bedside instruction. The course covers four years of six months each. Total fees for each of first two years, $120; for the third year, $85, and $125 for the fourth year. The Dean is Dr. P. Richard Taylor. Total enrolment for 1901-2 was 407; graduates, 65. The twenty-ninth session opens Jan. 1, 1903, and closes July 1, 1903.

SOUTHWESTERN HOMEOPATHIC MEDICAL COLLEGE.—This college was organized in 1892 and has a faculty of 18 professors and 13 lecturers and assistants, 31 in all. A college dispensary supplies clinical material. The curriculum covers four years of seven months each. Total fees: First and second years, $85; third, $75, and $70 for the fourth. The Dean is Dr. A. L. Monroe. Total number of students for 1901-2 was 27; graduates, 4. Next session opens Sept. 30, 1902, and closes April 28, 1903.

KENTUCKY UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1898. The faculty is composed of 14 professors, 19 lecturers, demonstrators, etc., 33 in all. Broadway Infirmary, the City Hospital, and a college dispensary furnish clinical material. The school is a member of the Association of American Medical Colleges. The buildings provide ample facilities for clinical, laboratory and didactic instruction. The course of study embraces graded work for four years of at least twenty-six weeks each. Total fees: First year, $110; second, $120; third, $90, and $120 for the fourth year. The Dean is Dr. Thomas C. Evans, 419 W. Chestnut St. Total number of students registered in 1901-2 was 238; graduates, 18. The next session opens Jan. 2, 1903, and closes July 2, 1903.

MEDICAL DEPARTMENT OF STATE UNIVERSITY.—This is a school for colored students organized in 1899. The faculty numbers 12. Instruction is given at night. The course is four years of six months each. Total matriculants for 1901-2 were 16. The Dean is Dr. W. T. Merchant.

LOUISVILLE NATIONAL MEDICAL COLLEGE.—Colored. This was chartered in 1888 and shows a teaching force of 15. There is a four-year course, seven months to the year; the total fees are about $50 for each year. The Dean is Dr. W. A. Burney. The next session opens Oct. 14, 1902. Graduates, 1902, numbered 7.

LOUISIANA.

Louisiana, having a population of 1,381,625, contains two medical colleges: Medical Department of the Tulane University of Louisiana and New Orleans University. They are both situated in New Orleans, a city of 287,104 people. The cost of room and board is from $10 to $22 a month.

New Orleans.

MEDICAL DEPARTMENT OF THE TULANE UNIVERSITY OF LOUISIANA. This school was organized in 1834 as the Medical College of Louisiana, and became by law in 1847 the Medical Department of the University of Louisiana, and in 1884 the Medical Department of the Tulane University of Louisiana. The faculty and all other instructors number 40. By acts of legislature the Charity Hospital, with its 900 beds, has been opened to the students of this school for clinical study not only in medicine and surgery, but also in obstetrics and gynecology. In the year 1901 there were 8368 cases treated in the wards of this hospital; these were indoor patients, and, in addition, 21,164 outdoor patients were treated in the free dispensary department. The Milliken Memorial Hospital, with a capacity for 200 children, is also available for study of clinical cases. Bedside instruction is given by the attending physicians to these hospitals, and postmortem examinations are held before the students. The requirements for admission to this college are those of the Southern Medical College Association. The laboratories are

large and well equipped, and the lecture and recitation rooms are ample. The course of study covers four years of six months each. Total fees for the first two years are $135 each, and for the third and fourth, $145 and $165, respectively. The Dean is Dr. Stanford E. Chaille, New Orleans. The total number of students registered for 1901-2 was 361; graduates, 53. The sixty-seventh session begins Oct. 23, 1902, and will close April 29, 1903.

FLINT MEDICAL COLLEGE OF NEW ORLEANS UNIVERSITY.—Colored. This school was organized in 1889. The faculty is made up of 8 professors, 3 lecturers and 3 instructors, 14 in all. Clinical material is supplied by the Sarah Goodridge Hospital and by an outdoor clinic. This college is a member of the Association of American Medical Colleges. The curriculum covers a graded course of four years, twenty-six weeks each. The laboratories and lecture rooms are ample. Examinations are held monthly. Total fees for the first year are $34; for the second, $37.50; third, $36.50, and $40 for the last year. The Dean is Dr. H. J. Clements, New Orleans. Total enrolment for 1901-2 was 47; graduates, 4. The thirteenth college year began Sept. 3, 1902, and will end March 6, 1903.

MAINE.

Maine, population 694,466, has one medical college:

Portland.

MEDICAL SCHOOL OF MAINE.—This is the Medical Department of Bowdoin College. It was organized in 1820. It has 13 professors and 5 instructors, total 18. Students of the first and second years are instructed in Brunswick, a town with 6800 inhabitants. The third and fourth year classes are taught in Portland, a city of 50,000 inhabitants and where are situated the Maine General Hospital and other clinical advantages. Applicants for admission, unless they possess a diploma, are examined in English, arithmetic, algebra, geometry, United States history, physics, chemistry and Latin. The course covers four years of twenty-six weeks each. The total fees are $120 for the first year; for the second and third, $110, and $130 for the fourth year. Board and lodging cost from $3 to $5 a week. The Dean is Dr. Alfred Mitchell, Brunswick. Total number of students in 1902, 90; graduates 4, under the former three-year requirement; no fourth-year graduates until 1903. The next session opens Dec. 25, 1902, and closes June 25, 1903.

MARYLAND.

Maryland, with a population of 1,188,044, contains eight medical colleges. They are all located in Baltimore, a city with 508,957 inhabitants, and they are as follows: School of Medicine of the University of Maryland, College of Physicians and Surgeons, Baltimore University School of Medicine, Baltimore Medical College, Woman's Medical College, Southern Homeopathic Medical College, Johns Hopkins Medical School and Maryland Medical College. The Bay View Hospital, having a capacity for 2000 patients, is open to students for clinical instruction, and furnishes good opportunities for practical demonstrations. Board and lodging can be obtained for from $3 to $5 per week.

Baltimore.

SCHOOL OF MEDICINE OF THE UNIVERSITY OF MARYLAND.—This institution was organized in 1807 as the College of Medicine of Maryland, and in 1812, other faculties having been added, the whole was chartered under the name of the University of Maryland. The faculty is composed of 14 professors, 21 clinical and associate professors, and 24 lecturers, demonstrators, etc., a total of 59. The University Hospital, a part of which is used for a hospital for foreign seamen and another portion for a free city hospital, offers excellent clinical facilities. Besides this, the Presbyterian Eye, Ear and Throat Charity Hospital, in which 10,734 patients were treated in 1900; the Hospital for the Relief of Crippled and Deformed Children, containing 40 beds; the Maternity Hospital, and a college dispensary furnish material for clinical study. This school is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are ample and well equipped. The fourth-year class, divided into sections, receives special training in practical laboratory work in a well-appointed clinical laboratory. Didactic, laboratory and clinical instructions, special attention being paid to bedside work, make up the system of teaching. The course covers four years of seven months each, and is graded. The total fees for the first two years are $120 each; for the third year, $110, and $140 for the final year. The Dean is Dr. R. Dorsey Coale, Baltimore. The total number of students registered in 1901-2 was 366; graduates, 76. The ninety-sixth session begins Oct. 1, 1902, and will terminate May 15, 1903.

COLLEGE OF PHYSICIANS AND SURGEONS, BALTIMORE.—This school was organized in 1872, and in 1878 Washington University School of Medicine, established in 1827, was consolidated with it. The faculty numbers 50. The clinical facilities, besides those afforded in common with other schools, are supplied by the Baltimore City Hospital, the Hospital for the Colored Race, containing 100 beds; the Nursery and Child's Hospital, with 150 beds; the Maryland Lying-in Asylum, and a college dispensary. This school is a member of the Association of American Medical Colleges. The work covers a graded course of four years, seven months constituting a year. Total fees for the first three years are $115 each, and $135 for the last year. The Dean is Dr. Thomas Opie. The total number of students registered in 1901-2 was 305; graduates, 58. The next session opens Sept. 30, 1902, and closes April 16, 1903.

BALTIMORE MEDICAL COLLEGE.—This college was organized in 1881, and has a faculty of 52. The clinical material is furnished by the Maryland General Hospital, having a capacity of 200 beds; the Maryland Lying-in Hospital, the Mount Hope Retreat, which presents good opportunity for the study of nervous and mental diseases, and a college dispensary, which, besides the great number of ambulatory patients treated, has an outdoor department that permits of the advanced student taking care of charity cases and carrying out his own treatment. This college belongs to the Association of American Medical Colleges. The college buildings afford ample laboratory, clinical and lecture-room space. Bedside teaching in the hospital wards is carried on in sections and every member of the senior class is required to attend throughout the session. The course of study is graded and covers four years of seven months each. The Dean is Dr. David Streett. The total number of students registered in 1901-2 was 532; graduates, 93. The twenty-second session opens Sept. 25, 1902, and closes about April 27, 1903.

WOMAN'S MEDICAL COLLEGE.—This school was organized in 1882 and has a faculty of 14 professors, 4 adjunct professors, and 9 assistants and lecturers, a total of 27. The Hospital of the Woman's Medical College, St. Mary's Asylum and a college dispensary furnish clinical material. The college is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are equipped with all necessary apparatus; the practical work is emphasized. Eight months constitute a school year, and the course covers graded work for four years. The total fees for the first three years are $105 each, and $85 for the last year. Total number registered for 1901-2 was 25; graduates, 4. The twenty-first session opens Oct. 1, 1902, and closes May 29, 1903.

BALTIMORE UNIVERSITY SCHOOL OF MEDICINE.—This school, organized in 1884, has a faculty of 12 professors and 11 lecturers, demonstrators, etc., in all 28. The Baltimore University Hospital, Lying-in Hospital and the clinical material used in common with the other schools, supply the facilities for practical work. This college is a member of the Association of American Medical Colleges. The college dispensary affords much clinical material and the students, under the direction of the physician in charge, make calls and treat patients at their homes. The lecture rooms and laboratories are ample, and the course of instruction, which consists of graded work for four years of six months each, is practical. The total fees for the first two years are $100 each; for the third year, $80, and $110 for the fourth year. The Dean is Dr. Hampson H. Biedler, 119 W. Saratoga St. Total registration for year 1901-2 was 63; graduates, 31. The nineteenth session opens Oct. 1, 1902, and closes April 15, 1903.

SOUTHERN HOMEOPATHIC MEDICAL COLLEGE.—This school was organized in 1890, and has a faculty of 11 professors, 4 associate professors, and 19 lecturers and demonstrators, a total of 34. The clinical facilities are those offered by the Maryland Homeopathic Hospital, which has 55 beds, and the dispensary; the obstetric department also furnishes clinical material. Applicants for matriculation must pass a satisfactory examination in English, arithmetic, geography, history, and Latin, unless they possess satisfactory evidence that they have done a corresponding amount of work. The course covers graded work for four years, seven months to the year. The fees are $105 for the first year, $100 each for the second and third, and $130 for the last year; $350 in advance for the full four years' course. The Dean is Dr. George T. Shower, 421 Roland Ave. Total registration 1901-2 was 35; graduates, 9. The twelfth session begins Oct. 6, 1902, and ends May 2, 1903.

JOHNS HOPKINS MEDICAL SCHOOL.—This is the Medical Department of Johns Hopkins University and was organized in 1893. The faculty comprises 11 professors, 17 clinical and associate professors, 16 lecturers and associates, and 25 instructors and assistants, a total of 69. The Johns Hopkins Hospital and Dispensary furnishes abundant and varied clinical material; the lying-in department of the hospital, opened in 1896, is in successful operation. The requirements for admission demand that the applicant either has, (a) completed the chemical-biologic course which leads to the A.B. degree in the University; (b) graduated at an approved college or scientific school, and can furnish evidence of an acquaintance with Latin and a fair reading knowledge of French and German, and such knowledge of physics, chemistry and biology as above indicated. If the candidate is unable to show this, he must pass a satisfactory examination covering this ground. This school is a member of the Association of American Medical Colleges. The anatomic, physiologic, pharmacologic, pathologic and clinical laboratories are large, well lighted and well equipped. The buildings are ample and built expressly for the purpose for which they are used. In the method of instruction special emphasis is laid upon practical work in the laboratories, dispensary and in the wards of the hospital. The first two years are devoted to practical work in the laboratories, combined with demonstrations, recitations and lectures, and during the remainder of the course opportunity for the personal study of cases is given. The work covers a graded course of four years and eight and a half months to the year. Final examinations, partly written and partly oral, include practical tests in laboratory and clinical work; the general character of the student's work is closely watched. The charge for tuition is $200 per annum, with no fees unless a microscope is rented; that fee is $5 a year. The Dean is Dr. William H. Howell, 232 W. Lanvale St., Baltimore. Total registration in 1901-2 was 229; graduates, 123. The tenth session begins Oct. 7, 1902, and ends June 15, 1903.

MARYLAND MEDICAL COLLEGE.—This school was organized in 1898, and has a faculty of 14 professors, and 14 associates, lecturers, etc., 28 in all. The Franklin Square Hospital and a college dispensary furnish clinical material. The course of study covers three years of eight months each, but after October, 1902, all students matriculating will be compelled to take a four years' course. A matriculation fee of $5 and total laboratory fees for the three years of $50 are charged; the tuition for full course is $75 each year. The Dean is Dr. J. Wm. Funck, 101 N. Fulton Ave. Total registration for 1901-2 was 128; graduates, 39. The fifth session begins Oct. 1, 1902, and closes in May, 1903.

MASSACHUSETTS.

Massachusetts, population 2,805,346, has four medical colleges: Medical School of Harvard University, Boston University School of Medicine, College of Physicians and Surgeons, and Tuft's College Medical School. They are all situated in Boston, a city of 500,892 inhabitants, and enjoy in common the following clinical advantages: The Massachusetts General Hospital, in which during the past year 5086 patients were treated in the wards and 31,003 in the out-patient departments; the

Boston City Hospital, where during that time 8719 ward patients and 22,640 out-patients were treated, and the Massachusetts Charitable Eye and Ear Infirmary, which furnished treatment for 22,349 patients during the past year. Library facilities are good. Board and lodging can be obtained for from $5 to $7 per week.

Boston.

MEDICAL SCHOOL OF HARVARD UNIVERSITY.—This was organized in 1872 as the Medical Department of Harvard University, and has a faculty composed of 23 professors, 12 associate and assistant professors, and 1 curator, a total of 36. Besides the clinical advantages mentioned, the Boston Lying-in Hospital, the Boston Dispensary, where 43,918 patients were treated last year; the Infants' Hospital, the Children's Hospital, Long Island Hospital, containing 250 beds, and the Marine Hospital all furnish excellent opportunity to the student for clinical study. Students are also permitted to visit the Free Hospital for Women and Carney Hospital on application to the physicians on duty. Candidates for admission "must present a degree in arts, literature, philosophy or science from a recognized college or scientific school, with the exception of such persons, of suitable age and attainments, as may be admitted by special vote of the faculty in each case." Each candidate is required to hand in the original note-book in which he recorded the work performed by him in qualitative analysis, and also to pass a written examination in theoretical and descriptive chemistry. If conditioned in chemistry one year is allowed in which to remove the condition. The laboratories and lecture rooms offer ample facilities and the equipment is good; special facilities are open to those desiring to pursue advanced or original work. The course of study covers four years of nine months each; the course is graded, and each correlated group as taken up presents sufficient variety to avoid monotony. A series of written, oral and practical examinations are distributed throughout the course of study. Fees: Matriculation, $5; for the first three years, $200 each, and for the last year, if the three previous years have been taken in this school, $130; total of other fees charged is $22. The Dean is Dr. William L. Richardson, 688 Boylston St. Total registration for 1901-2 was 496; graduates, 167. The 121st session begins Sept. 25, 1902, and ends June 24, 1903.

BOSTON UNIVERSITY SCHOOL OF MEDICINE.—Homeopathic. This school was organized in 1873; in 1874 the New England Female Medical College, founded in 1848, was merged into it. The faculty includes 20 professors, 20 associates and lecturers, and 18 instructors and assistants, a total of 58. Clinical material is furnished by the Massachusetts Homeopathic Hospital, containing 225 beds, a dispensary, a maternity hospital, and the Westborough Insane Hospital; 800 patients. Candidates who have taken their degree in arts, philosophy or science, are not examined; all others are examined in English, Latin, French or German or history, mathematics, physics and chemistry. The instruction is graded and covers a period of four years, eight months each. Total fees for the first year are $105; for the second and third, $125 each, and for the last year, $155. The Dean is Dr. John P. Sutherland, 295 Commonwealth Avenue. Total registration for 1901-2 was 125; graduates, 23. The thirtieth session opens Oct. 2, 1902, and closes June 3, 1903.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1880, and has a faculty of 21 professors, and 15 lecturers and assistants, a total of 36. Clinical facilities are furnished by the North End Hospital and Dispensary, Union General Hospital, and the city and state institutions. This school is a member of the Association of American Medical Colleges. The course of study covers graded work for four years of eight months each. The total fees for the first year are $100, and for each of the other years about $110, with a graduating fee of $30. The Registrar is Dr. John H. Jackson, 155 Franklin St., Fall River. Total students registered 1901-2, 131; graduates, 9. The twenty-third session begins Sept. 25, 1902, and ends June 26, 1903.

TUFTS COLLEGE MEDICAL SCHOOL.—This school was organized in 1893 as the Medical Department of Tufts College. It has a faculty of 16 professors, 6 assistant professors and 31 lecturers, instructors and assistants, a total of 53. Clinical material is furnished by the Boston Dispensary, Cambridge Hospital, St. Elizabeth's Hospital, Carney Hospital and the college dispensary; the student has also the advantages derived from an out-department in connection with the Boston Dispensary. "Graduates of a high school, college or university, and students having certificates of entrance to a college or university, or holding the state of New York Regents' certificate," also certain approved preparatory school graduates, are admitted without examination; all others must pass an examination in English, Latin, physics and mathematics, including arithmetic, elementary algebra and plane geometry. The laboratories and lecture rooms are ample in their equipment and capacity. Teaching is carried on by means of lectures, recitations and practical work in the laboratories and clinics; frequent examinations are held during a course and a final examination on completing the subject. Graded instruction covering four years of eight months each makes up the full course. The total fees are $125 each year; dissecting material is furnished at cost. The Dean is Dr. Harold Williams, 528 Beacon St. Total number of students for 1901-2 was 335; graduates, 35. The tenth session begins Oct. 2, 1902, and ends May 28, 1903.

MICHIGAN.

Michigan, population 2,420,982, has seven medical colleges. Two of these, University of Michigan Department of Medicine and Surgery and the Homeopathic College of the University of Michigan, are located at Ann Arbor, a town of 14,509 people. Board and lodging cost from $2.50 to $5 a week. Detroit, a city of 285,704 inhabitants, contains three medical colleges, as follows: Detroit College of Medicine, Detroit Homeopathic College and the Michigan College of Medicine and Surgery. Board and room can be obtained for $3 a week upwards. Grand Rapids Medical College is located in Grand Rapids, population 87,565, and here the cost of room and board is from $3 to $3.50 a week. The other school, Saginaw Medical College, is located in Saginaw, a city having a population of 42,345. Board and lodging can be procured for from $3 to $4.50 a week.

Ann Arbor.

UNIVERSITY OF MICHIGAN, DEPARTMENT OF MEDICINE AND SURGERY.—This department of the state university was organized in 1850, and has a faculty composed of 17 professors and junior professors, 15 associates and lecturers, and 35 instructors, assistants, etc., a total of 67. The University Hospital together with the lying-in department furnish the clinical facilities. There is now in process of erection a large ward to be known as the Palmer Ward, and also a psychopathic ward to accommodate 40 patients. The requirements for admission provide that the applicant, either by certificate or examination, show a sufficient knowledge of the following: English grammar, rhetoric and composition; United States and general history; algebra, through quadratics, plane and solid geometry and plane trigonometry; physics, biology and chemistry, these subjects to be accompanied by laboratory work; German or French, and Latin. The laboratories and their equipment are good, and the training in them and in didactic work is thorough. A large building, now nearing completion, and to be used for laboratory instruction and investigation, will be ready for occupancy at the beginning of the next session. This school is a member of the Association of American Medical Colleges. The curriculum embraces four years of nine months each. A combined course leading to degrees in both arts and medicine in six years is offered. The total fees for Michigan students for the entire course of four years is about $300, and for others $350. The Dean is Dr. Victor C. Vaughan, Ann Arbor. Total registration for 1901-2 was 508; graduates, 84. Net session begins Sept. 23, 1902, and will end June 18, 1903.

HOMEOPATHIC COLLEGE, UNIVERSITY OF MICHIGAN.—This department of the University was organized in 1875 and has a faculty of 6 professors, 3 assistants and 2 non-resident lecturers; the remainder of the teaching force utilized is that of the other departments of this University. The Homeopathic Hospital, containing 140 beds, furnishes material for clinical teaching. The course covers four years of nine months each. The total fees for Michigan students are about $240 for the four years, and for other students about $295. The Dean is Dr. W. B. Hinsdale. Total enrolment for 1901-2 was 55; graduates, 8.

Detroit.

DETROIT COLLEGE OF MEDICINE.—This school was formed in 1885 by the union of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, established 1880. The faculty embraces 21 professors, 44 lecturers, instructors, etc., and 30 clinical professors, a total of 95. Clinical facilities are offered by the following hospitals: St. Mary's and Harper, each of which contain a free dispensary: Woman's, St. Luke's, the Children's Free Hospital and the House of Providence. This school is a member of the Association of American Medical Colleges. The course covers four years of seven months each. The work includes laboratory, didactic and clinical study. Fees: Matriculation, paid once, $5; tuition, each term, $65; hospital and laboratory tickets, each $10, and diploma fee $30. The secretary is Dr. H. O. Walker. Total enrolment for 1901-2 was 242; graduates, 48. The next session begins Sept. 24, 1902; and will close May 7, 1903.

MICHIGAN COLLEGE OF MEDICINE AND SURGERY.—This school was organized in 1888, and has a faculty of 17 professors and 13 assistants, 30 in all. Clinical facilities are offered by a college dispensary, the Emergency Hospital and Detroit Eye and Ear Infirmary. This school is a member of the Association of American Medical Colleges. The course covers graded work for four years of seven months each. Fees: For the first two years, $85 each; third year, $70, and $95 for the fourth year. The Dean is Dr. Hal. C. Wyman, 46 W. Adams Ave., Detroit. Total registration for 1901-2 was 75; graduates, 13. The fifteenth session begins Sept. 18, 1902, and will end May 1, 1903.

DETROIT HOMEOPATHIC COLLEGE.—This was organized in 1899, and has a faculty of 37. Grace Hospital and a college dispensary are available for study of clinical cases. Unless possessing certificate of an equal amount of work completed, applicants for admission will be examined in English, arithmetic, history, geography and elementary Latin. The course embraces work for four years of seven months each. Fees: First year, $92; second, $85; third, $70, and $90 for the fourth year. The Dean is Dr. D. A. MacLachlan. Total enrolment for 1901-2 was 45; graduates, 6. The next session begins Sept. 24, 1902, and will close April 21, 1903.

Grand Rapids.

GRAND RAPIDS MEDICAL COLLEGE.—This was organized in 1897 as a three-year school, but the catalogue shows that all students matriculating after Jan. 1, 1901, will be compelled to take a four-year course of six months each. The faculty is made up of 21 professors and 6 assistants, in all 31. Clinical cases in the U. B. A. Hospital, St. Mary's, Woman's Butterworth hospitals, and St. John's Orphan Asylum and a college dispensary are available for study. The total fees are about $65 for each year. The Dean is Dr. C. H. White. Total enrolment for 1901-2 was 73; graduates, 47. Next session opens Oct. 1, 1902, and closes June 1, 1903.

Saginaw.

SAGINAW VALLEY MEDICAL COLLEGE.—This school was organized in 1896; it has a teaching force of 30. Clinical material is supplied by a college hospital and a college dispensary. Education equivalent to graduation from a recognized high school is required for admission. The course covers four years of seven months each. Fees: Matriculation, paid once, $5; tuition, each year, $50; laboratory and hospital and dissecting ticket each, $10, and graduation fee, $25. The Secretary is Dr. W. H. Cornell, Saginaw. Total enrolment for 1901-2 was 100; graduates, 41.

MINNESOTA.

Minnesota, population 1,751,394, contains three medical colleges: College of Homeopathic Medicine and Surgery, Hamline University College of Medicine, and College of Medicine and Surgery. They are all situated in Minneapolis, a city with a population of 202,718, and owing to its proximity to St. Paul, the following clinical advantages are available to them: City Hospital, Minneapolis; City Hospital, St. Paul; St. Luke's and St. Joseph's hospitals, both in St. Paul. The average cost of board and lodging is $20 a month. An agreement as to requirements for admission has been entered into between the University of Minnesota and Hamline University. They are (a) proof that the candidate has completed work in English composition and rhetoric; history, both ancient and modern; physiology, physics, algebra, geometry, and Latin equal to one year's work, or (b) ability to pass a satisfactory examination in these subjects.

Minneapolis.

COLLEGE OF MEDICINE AND SURGERY.—This is a department of the University of Minnesota and was organized in 1883. Until 1883 its work was only to examine for the degrees of B.M. or M.D., but at that time, with the absorption of the Minnesota Hospital Medical College and the St. Paul Medical College, it was reorganized and its present function assumed. Its faculty is made up of 26 professors, 10 clinical professors, 23 instructors and lecturers, and 22 assistants, a total of 81. Besides the clinical advantages enjoyed in common with other schools, St. Mary's, St. Barnabas and Asbury Methodist hospitals, the City and County hospitals of St. Paul and the St. Paul Dispensary, as well as the college dispensary, all furnish valuable material for clinical study. This college is a member of the Association of American Medical Colleges. The medical buildings, four in number, offer good laboratory and lecture-room facilities, and the equipment is all that is needed for thorough instruction. The curriculum covers four years of nine months each and the work is carefully graded. The total fees for each year is $100. The Dean is Dr. Parks Ritchie, Minneapolis. Total number of students registered for 1901-2 was 362; graduates, 61. The next session opens Sept. 17, 1902, and closes June 4, 1903.

HAMLINE UNIVERSITY COLLEGE OF MEDICINE.—This was organized in 1883. Its faculty is composed of 24 professors, 6 associate and clinical professors, and 17 instructors and assistants, a total of 47. The laboratories and lecture rooms are large, well lighted and supplied with all the necessary equipment. Besides the hospitals mentioned, clinical work is offered to the student in City Hospital, Asbury Methodist Hospital, St. Barnabas and St. Mary's Hospitals in Minneapolis, Bethesda Hospital, City and County, and St. Joseph's, in St. Paul, and the college dispensary. This school belongs to the Association of American Medical Colleges. The course of study covers graded work for four years, nine months making a year. Total fees, first year, $85; second year, $87.50, and for each of the last two, $80. The Dean is Dr. L. M. Crafts, Minneapolis. Total number of students 1901-2 was 139; graduates, 34. The next session begins Sept. 17, 1902, and ends June 11, 1903.

COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.—This is a department of the University of Minnesota and was organized in 1888. The faculty comprises 15 professors and 14 assistants, 29 in all. The primary branches are taught by the professors of the College of Medicine and Surgery. The course is graded, extending over four years of eight and one-half months each. The total fees for the first two years are $100 each, and $80 each for the last two years. The Dean is Dr. Alonzo P. Williamson, Minneapolis. Total number of students registered in 1901-2 was 21; graduates, 3. The next session opens Sept. 16, 1902, and closes June 5, 1903.

MISSOURI.

Missouri, population of 3,106,665, has fifteen medical colleges. St. Louis, population 575,238, contains six of these, viz.: St. Louis College of Physicians and Surgeons, American Medical College, Homeopathic Medical College of Missouri, Marion-Sims-Beaumont College of Medicine, Washington University Medical Department, and Barnes Medical College. Board and lodging can be procured for from $3.50 to $5 a week. Kansas City, with 163,752 inhabitants, has six colleges, namely: Kansas City Medical College, University Medical College, the Hahnemann Medical College of Kansas City, Woman's Medical College, Medico-Chirurgical College and Eclectic Medical University. Room and board can be obtained in this city for from $3 to $5 a week. Ensworth Medical College and Central Medical College are located in St. Joseph, population 102,979; board and room can be had for from $2.50 to $5 a week. The Department of Medicine of the University of Missouri is at Columbia, a town of 5651. Board and lodging can be obtained at Columbia for from $2 to $5 a week.

St. Louis.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1878, and has a faculty of 21 professors, 19 lecturers, demonstrators, and clinical instructors, and 4 special lecturers, a total of 44. The resources for clinical instruction are Jefferson Hospital, which is open to students of this college only; City Hospital, with 600 beds; Female Hospital, having 250 beds; City Insane Asylum; City Poorhouse and the college dispensary. This college is a member of the Association of American Medical Colleges. The laboratory and lecture-room space and the equipment are ample. The course of study covers four years of seven months each, and is graded. Total fees for the first year are $70, second $60, and third $60, and $75 for the fourth year. The Dean is Dr. Waldo Briggs, 1405 Olive St. Total number of students registered, 1901-2, was 280; graduates, 50. The twenty-fourth session begins Sept. 16, 1902, and ends April 9, 1903.

AMERICAN MEDICAL COLLEGE.—Eclectic. This was organized in 1873, and has a faculty of 18 professors and 15 clinical instructors, a total of 33. Metropolitan Hospital, containing 40 beds, St. Louis City Hospital and a college dispensary supply ample clinical material. The requirements for admission are those of the National Confederation of Eclectic Medical Colleges, of which this college is a member. The course of study covers four years of seven months each. The total fees are: tuition $75 per year, dissecting material $5 per year for three years, final examination and graduation fee $25. A scholarship, including four years, $250, paid $100 first year, $100 second year, $50 third year. If paid cash in advance, $240. Total registration for 1901-2 was 69; graduates, 14. The Dean is Dr. E. Lee Standlee. The present session opens Sept. 22, 1902, and closes April 22, 1903.

HOMEOPATHIC MEDICAL COLLEGE OF MISSOURI.—This was organized in 1857 and has a faculty of 26 professors and 5 assistants, total 31. Clinical facilities are offered by the City Hospital, Children's Free Hospital and a college dispensary. The curriculum covers four years of seven months each. Fees: First year, $80; second, $75; third, $60, and $85 for the fourth year. The Dean is Dr. W. B. Morgan. Total registration for 1901-2 was 67; graduates, 12. The next session opens Sept. 22, 1902, and closes April 9, 1903.

MARION-SIMS-BEAUMONT MEDICAL COLLEGE.—By the union of Marion-Sims, organized in 1890, and Beaumont Hospital Medical College, organized in 1886, the present school was founded. The faculty is composed of 38 professors, 33 lecturers and assistants, and 5 demonstrators, a total of 76. Clinical facilities are offered by Alexian Brothers' Hospital, with 250 beds; Rebekah Hospital, having a capacity for 50 patients; Josephine Hospital, 50 beds; Mt. St. Rose Throat and Chest Hospital, 150 beds; Good Samaritan Hospital, 50 beds; St. Mary's Infirmary, containing 150 beds; the City Hospital and Insane Asylum, each with a capacity of 600 patients. Grand Avenue Dispensary also furnishes good material for practical instruction. This school is a member of the Association of American Medical Colleges. The buildings afford ample laboratory and lecture-room space and they are well equipped. The course of study embraces laboratory and clinical instruction, with recitations and lectures. The curriculum covers four years of seven months each. The total fees for the first year are $80; for the second and third, $75 each, and $100 for the fourth. The Secretary is Dr. H. W. Loeb. Total number of students registered for 1901-2 was 488; graduates, 55. The next session opens Oct. 1, 1902, and closes May 1, 1903.

WASHINGTON UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1891 from the St. Louis Medical College, which was founded in 1842. In 1899 the Missouri Medical College, organized in 1840, was added. The faculty comprises 36 professors, 19 clinical professors and lecturers, and 5 instructors, a total of 60. Clinical material is furnished by the St. Louis Mullanphy Hospital, St. John's Hospital, Polyclinic Hospital, Bethesda Hospital and O'Fallon's Dispensary. In addition to these, the City Hospital, Female Hospital, Insane Asylum and Poorhouse, are used in common with the other schools. The requirements for admission are those of the Association of American Medical Colleges. The college buildings, of which there are two, furnish good laboratory and lecture-room facilities. The course is four years of seven and one-half months each, and the system of study embraces laboratory, didactic and clinical teaching. The total fees for the first year are $121; second, $105, and for the third and fourth years, $100 each. The Dean is Dr. Robert Luedeking. Total registration of students for 1901-2 was 263; graduates, 43. The next session opens Sept. 25, 1902, and closes May 14, 1903.

BARNES MEDICAL COLLEGE.—This school was organized in 1892, and has a faculty of 24 professors, 9 lecturers and 11 assistants and instructors, a total of 44. The clinical advantages are those offered by Centenary Hospital, with 150 beds; City Hospital, the college dispensary and the outdoor obstetrical department. This college is a member of the Association of American Medical Colleges. The laboratories are well equipped and other facilities ample. The course of study includes graded work for four years of seven months each. The total fees for the first three years are $75 each, and $85 for the fourth year. The Secretary is Dr. Pinckney French, Century Bldg. Total registration for 1901-2 was 501; graduates, 78. The eleventh session opens Sept. 8, 1902, and closes April 9, 1903.

Kansas City.

KANSAS CITY MEDICAL COLLEGE.—This was established in 1869, and has a faculty of 23 professors, and 22 lecturers, demonstrators, etc., in all 45. The clinical facilities are those of St. Joseph's Hospital, which also contains an out-patient department; the City Hospital, Bethany Hospital, Scarritt Hospital, St. Anthony's Home for Children and the college dispensary. This college is a member of the Association of American Medical Colleges. The building is large and well equipped, the course is graded and the classes in practical work are divided into small sections and required to personally conduct series of obstetric, medical and surgical cases as a condition of graduation. The curriculum embraces four years of seven months each. The total fees for the first three years are $75 each, and $85 for the fourth. The Dean is Dr. Robt. T. Sloan, Rialto Bldg. Total registration for 1901-2 was 111; graduates, 21. The thirty-fourth session begins Sept. 16, 1902, and ends March 25, 1903.

UNIVERSITY MEDICAL COLLEGE.—This was organized in 1881 as the University of Kansas City Medical Department and in 1888 was reorganized under its present name. Its faculty comprises 21 professors, 11 adjunct professors and lecturers, and 14 assistants, a total of 46. Clinical material is furnished by the University Hospital, owned by the college, with 100 beds; the City Hospital, German Hospital, Home for the Aged, containing 147 beds; the Sisters' Hospital, Scarritt and St. Margaret's hospitals, the Children's Home, St. Joseph's Orphan Asylum, and the college dispensary and obstetric department. Instruction is given by means of lectures,

recitations, demonstrations, and laboratory work and clinics. The school is a member of the Association of American Medical Colleges. The college building, which has been recently enlarged, furnishes ample accommodations for laboratories and lecture rooms. The course of study covers four years of six months each, and the work is graded. The total fees for each of the first two years are $80, for the third $60, and $85 for the fourth year. The Dean is Dr. Samuel C. James, Bryant Bldg. The total number of students registered in 1901-2 was 225; graduates, 27. The twenty-second session begins Sept. 9, 1902, and ends March 27, 1903.

KANSAS CITY HAHNEMANN MEDICAL COLLEGE.—This school was formed by the union of the Kansas City Homeopathic Medical College, organized in 1888, and the Kansas City University College of Homeopathic Medicine and Surgery. It has a faculty of 32. The City Hospital, Homeopathic Hospital, the Sanitarium, Scarritt, University, Women's and Children's, German, Bethany and Children's hospitals are open to its students for clinical study. The college dispensary and clinics also supply clinical material. Applicants for admission must show by diploma, certificate or examination that they have a sufficient knowledge of English, arithmetic, geography, United States history, and Latin equal to one year's work. The course covers four years of seven months each. Total registration for 1901-2 was 72; graduates, 10. The fifteenth session begins Sept. 9, 1902, and closes April 9, 1903. The Dean is Dr. S. H. Anderson, 1214 Main St.

WOMAN'S MEDICAL COLLEGE.—This school was organized in 1895, and has a faculty composed of 33 professors, 11 lecturers and assistants, a total of 44. Material for clinical study and demonstration is furnished by St. Joseph's, Scarritt, German, Sisters', Agnew, St. Margaret's and City hospitals, and the college dispensary. The requirements for admission are those of the Association of American Medical Colleges. The course of study embraces graded work for four years of seven months each. The total fees for the first year are $68; second, $60; third, $55, and $80 for the fourth year. The Dean is Dr. Nannie P. Lewis, 1219 Wyandotte St., Kansas City. Total number of matriculants for 1901-2 was 216; graduates, 6. The eighth session opens Sept. 17, 1902, and closes March 26, 1903.

MEDICO-CHIRURGICAL COLLEGE.—This school was organized in 1897 as the Kansas City College of Medicine and Surgery of Kansas City, Kan., and was reorganized the following year under its present name. Its faculty embraces a total of 41. Clinical facilities are furnished by the hospitals of Kansas City used in common by the medical colleges, and a college dispensary. The course covers four years of six months each. The fees are: For the first year, $70; second, $65; third, $55, and $75 for the fourth year. The Dean is Dr. George O. Coffin, 400 New Ridge Building. Total registration for 1901-2 was 87; graduates, 13. The present session opens Sept. 17, 1902, and closes March 20, 1903.

ECLECTIC MEDICAL UNIVERSITY.—This was organized in 1898 and has 20 in its faculty. The curriculum covers four years of six months each. Fees, about $70 each year, with a graduation fee of $15. The Dean is Dr. Theodore Doyle. Total students for 1901-2 was 49; graduates, 12. The next session begins Sept. 15, 1902, and ends March 13, 1903.

Columbia.

DEPARTMENT OF MEDICINE OF THE UNIVERSITY OF THE STATE OF MISSOURI.—This department was organized at Columbia ni 1872. The faculty includes 12 professors, 18 assistants, lecturers, etc., a total of 30. Clinical facilities are supplied by the Parker Memorial State Hospital and the Boone County Infirmary. A new $40,000 building for the medical laboratories has just been completed and has excellent equipment. Special emphasis is laid on thorough training in the scientific branches which constitute the foundation of medicine. Four years' course, nine months each, carefully graded. The University offers also a combined course of six years, conferring degrees in both arts and medicine. The entrance requirements are a diploma from a good high school, or the full equivalent. There is no charge for tuition, the only expense being a library fee of $5 each year, and small laboratory fees. The Dean is Dr. A. W. McAlester. Total registration of students for 1901-2 was 90 (no graduates). The next session opens Sept. 9, 1902, and closes June 3, 1903.

St. Joseph.

ENSWORTH MEDICAL COLLEGE.—This was organized in 1888, and has a faculty of 19 professors and 12 lecturers and assistants, 31 in all. St. Joseph's Medical Hospital, with 250 beds; City Hospital, containing 40 beds; the State Hospital No. 2, which is open to the students once a week, and a college dispensary furnish clinical material. Applicants for admission must show by certificate or examination, that they possess a sufficient knowledge of English, arithmetic, algebra, physics and Latin equal to one year's instruction. The building furnishes ample laboratory and lecture-room facilities. The curriculum covers a graded course of four years of six months each. The fees are about $55 each for the first three years, and $75 for the fourth year. The Dean is Dr. Jacob Geiger, St. Joseph. Total enrolment for 1901-2 was 80; graduates, 14. The present session opened Sept. 1, 1902, and closes March 1, 1903.

CENTRAL MEDICAL COLLEGE.—This school was organized in 1894, and has a faculty made up of 16 professors and 14 lecturers, in all 30. The Methodist and St. Joseph's hospitals, State Hospital No. 2, and the City and County hospitals are available for clinical study; a college dispensary also supplies clinical material. The requirements for admission are the possession of a certificate for work completed, or an examination. The curriculum embraces four years of six months each. Fees: First year, $55; second, $50; third, $50, and $75 for the fourth year. The Secretary is Dr. T. E. Potter. Total enrolment for 1901-2 was 82; graduates, 11. The eighth session began Sept. 1, 1902, and will end March 1, 1903.

NEBRASKA.

Nebraska, population 1,066,300, has three medical colleges: Omaha Medical College, and John A. Creighton Medical College, in Omaha (population 102,555); and Lincoln Medical College, at Lincoln (population 40,169).

Omaha.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE.—This was organized in 1881 as Omaha Medical College. The name was changed this year and, as soon as practicable, the first two years' work will be done at the University at Lincoln. The last two years will continue to be conducted at Omaha, population 102,555. The faculty is composed of 28 professors, 18 adjunct professors and lecturers, a total of 46. The Douglas County Hospital, accommodating 300 patients; Bishop Clarkson Memorial Hospital, Immanuel Hospital, the Omaha Methodist Hospital and the college dispensary furnish good material for clinical study and demonstration. This college is a member of the Association of American Medical Colleges. The college building is well adapted for its purpose and the laboratories and lecture rooms are commodious and completely equipped. The course of work embraces graded studies covering four years of eight months each. The method of instruction is made up of didactic and clinical lectures, demonstrations, quizzes and laboratory work. The total fees for the first two years are $80 each, and $85 for each of the last two years. Board and lodging can be obtained for from $3 to $5 a week. The Secretary is Dr. Ewing Brown, Omaha. Total number of students registered in 1901-2 was 153; graduates, 38. The twenty-second session begins Sept. 10, 1902, and will end May, 1903.

JOHN A. CREIGHTON MEDICAL COLLEGE.—This school, organized in 1892, is the Medical Department of Creighton University, and has a faculty of 27 professors, 8 associates and lecturers, and 7 assistants, a total of 42. The clinical facilities are those of St. Joseph's Hospital, containing 300 beds and having a clinical amphitheater connected with it; St. Bernard's Hospital, with 160 beds; Douglas County Hospital, Presbyterian Hospital, and the college dispensary; the material is abundant and varied. The school is a member of the Association of American Medical Colleges. The building, which was completed in 1898, contains excellent facilities for laboratory and lecture-room work, and the equipment is good. In the methods of instruction, including clinical, didactic and laboratory work, special emphasis is laid on practical work. The course of study embraces four years of eight months each. The total fees for the first two years are $80 each, and $85 for each of the last two years. The Dean is Dr. D. Bryant, McCague Bldg. Total number of students registered in 1901-2 was 151; graduates, 37. The tenth session opens Sept. 23, 1902, and closes May 1, 1903.

Lincoln.

LINCOLN MEDICAL COLLEGE.—Eclectic. This was organized in 1889 and has a faculty of 25. The City Hospital and the college dispensary furnish clinical material. The requirements for admission are those of the National Confederation of Eclectic Medical Colleges, of which this college is a member. The course of study covers four years of thirty-two weeks each. The total fees for the first year are $83; second, $78; third, $70, and $65 for the fourth year. The Dean is Dr. J. M. Keys, Omaha. Total number of students for 1901-2 was 98; graduates, 21. The present session begins Sept. 15, 1902, and ends May 21, 1903.

NEW HAMPSHIRE.

New Hampshire, population 411,588, contains one medical college.

Hanover.

DARTMOUTH MEDICAL SCHOOL.—This is the Medical Department of Dartmouth College, located in Hanover, population 1884. The school was organized in 1797. Its faculty is made up of 15 professors and 5 instructors, 20 in all. The Mary Hitchcock Memorial Hospital and a cottage hospital of 36 beds, supply the clinical material. Applicants for admission must possess an education at least equivalent to graduation from a registered high school. The laboratories afford good facilities for work in physics, biology, chemistry and physiology. The course covers four years of thirty-two weeks each. Total fees for the first three years are $110, and $135 for the fourth year. The Dean is Dr. William T. Smith. The total number of students registered for 1901-2 was 72; graduates, 15. The work for the entering class begins with that of the academic department, commencing Sept. 12, 1902, and closing April 9 and June 21, 1902; for the advanced classes it begins in July and ends in February.

NEW YORK.

New York State, population 7,268,894, has ten medical colleges. Seven of these, College of Physicians and Surgeons, Long Island College Hospital, New York Homeopathic Medical College, New York Medical College, Eclectic Medical College, Cornell University Medical College and the University and Bellevue Hospital Medical College are located in New York City, population 3,437,202. This city, with its hospitals and dispensaries, offers abundant clinical material. Board and lodging can be obtained for from $5 to $7 a week.

Albany Medical College is located in Albany, a city of 94,151 people, where board and room can be had for from $4 to $5 a week.

The University of Buffalo Medical Department is situated in Buffalo, population 352,387; here board and lodging can be obtained for from $3.50 to $5 per week.

The College of Medicine, Syracuse University, is in Syracuse, a city with 108,374 inhabitants. Board and lodging can be procured for from $3.50 a week upwards.

The laws of the state of New York require of the prospective student of medicine a preliminary education equivalent to that obtainable in a four years' course in any of the public high schools recognized by the regents as maintaining a satisfactory

standard. Upon proof of at least this amount of education, a medical-student certificate will be issued by the state authorities. The colleges, therefore, have a common standard for the requirements of admission.

New York City.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1807 and its present relation, that of Medical Department of Columbia University, was assumed in 1860. The faculty embraces 11 professors, 23 clinical and adjunct professors and 75 demonstrators, instructors, etc., a total of 109. The Vanderbilt Clinic, where 47,156 patients were treated during the year 1901, and which is equipped with all modern appliances for the study and treatment of disease, and Sloane Maternity Hospital, containing 116 beds, offer exclusive clinical advantages to students of this school. Besides these, Roosevelt Hospital, containing 238 beds; New York Hospital, with 150 beds; Bellevue, 850 beds; Presbyterian, 330 beds; St. Luke's, General Memorial, and New York Foundling hospitals, together with the Eye and Ear Institute, containing 40 beds, St. Mary's Free Hospital for Children, and the Hospital for the Ruptured and Crippled, all offer free clinical teaching to matriculants of this school. The laboratories, lecture rooms and amphitheaters are ample in equipment and accommodation; special provisions are made to equip each student thoroughly in each of the laboratories and thus make the work individual. The work is graded, covering four years of eight months each. The total fees for the first year are $205; for the second and third, $200 each, and $225 for the fourth year. The Dean is Dr. James W. McLane. Total registration for 1901-2 was 778; graduates, 145. The next session begins Oct. 6, 1902, and ends June 10, 1903.

LONG ISLAND COLLEGE HOSPITAL.—This was organized in 1858, and has a faculty of 11 professors, 13 adjunct and clinical professors and 45 lecturers, instructors, etc., a total of 69. Long Island College Hospital, containing 300 beds and being connected with a four-story maternity hospital; Polhemus Memorial Clinic, and Hoagland Laboratory, completely equipped with the most modern apparatus, are all a part of the college. Besides the clinical facilities furnished by these, members of the faculty attend at Kings County, St. John's, Brooklyn, Norwegian, Williamsburg, Methodist Episcopal and the Brooklyn Eye and Ear hospitals, where the students are offered opportunities for clinical study. Many of these also contain out-patient departments, thus permitting advanced students to attend personally to cases. Bedside instruction is also given in the wards. The course covers four years of thirty weeks each. Fees: First year, $190; second, $195; third, $160, and $145 for the fourth year. The Secretary is Dr. Joseph H. Raymond, New York City. Total registration, 1901-2, was 245; graduates, 31. The forty-fifth session opens Oct. 1, 1902, and closes May 15, 1903.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND HOSPITAL.—This school, organized in 1861, has a faculty of 27 professors and 21 lecturers, instructors, etc., 48 in all. Flower Hospital, adjoining the college and having a completely equipped out-patient department, Metropolitan Hospital, New York Ophthalmic Hospital and the Laura Franklin Free Hospital for Children furnish the clinical facilities. The course covers four years of seven months each. Total fees for the first year, $110; second, $130; third, $125, and $155 for the fourth year. The Dean is Dr. W. H. King, 64 W. 51st St. Total number of students registered for 1901-2 was 106; graduates, 23. The next session begins Sept. 30, 1902, and ends May 7, 1903.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN.—Homeopathic. This school was organized in 1863, and has a faculty of 21 professors, 3 adjuncts, and 14 lecturers, and 6 assistants, a total of 44. The college hospital and dispensary, the Memorial Hospital for Women, Metropolitan, Flower and the Laura Franklin Free Hospital for Children afford clinical material. The course covers four years of twenty-six weeks each. Fees: First year, $100; second, $110; third, $100, and $130 for the fourth year. The Dean is Dr. M. Belle Brown, 30 W. 51st St. Total registration for 1901-2 was 32; graduates, 6. The next session opens Sept. 30, 1902, and closes May 12, 1903.

ECLECTIC MEDICAL COLLEGE.—This was organized in 1865 and has a faculty of 12 professors and 23 lecturers, demonstrators, etc., 35 in all. A college dispensary, Beachonian Dispensary, Manhattan and Red Cross hospitals and Muncie Sanatorium supply clinical facilities. The work covers four years of seven months each. Total fees: First year, $125; second, $125; third, $125, and $155 for the fourth year. The Dean is Dr. George W. Boskowitz. Total registration for 1901-2 was 100; graduates, 7. The next session opens Sept. 24, 1902, and closes May, 1903. This school is a member of the National Confederation of Eclectic Medical Colleges.

CORNELL UNIVERSITY MEDICAL COLLEGE.—This department of Cornell University was established in 1898. The faculty is composed of 21 professors, 10 clinical professors, 36 instructors, and 67 clinical instructors and assistants, a total of 134. The City Hospital, having 1000 beds; Bellevue Hospital, New York Hospital, Presbyterian, Willard Parker and Reception, with 200 beds; New York Skin and Cancer; St. Francis, having a capacity of 230 beds; St. Vincent's, with 200 beds; the Manhattan Eye and Ear Hospital, and the Eye and Ear Infirmary, in addition to a large college dispensary, furnish the clinical resources; the material is abundant and varied. The first two years of the course are taken at New York or at Ithaca and the work is devoted to the fundamental scientific subjects. The last two years are spent mostly in practical and clinical work and the hospital advantages are utilized. The Loomis Laboratory, a five-story modern building, is well equipped and supplies ample practical laboratory facilities required in the advanced work. "The essential feature of the entire system is the division of the classes of the several years into small sections." Fees: First year, $190; second and third, $180 each, and $200 for the fourth year. The Dean is Dr. William M. Polk. Total registration for 1901-2 was 415; graduates, 53. The next session opens Oct. 1, 1902, and closes June 3, 1903.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE.—This is a department of the New York University, and was founded in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. The faculty is composed of 30 professors, 33 clinical professors and lecturers, and 50 instructors, demonstrators, etc., in all 113. Bellevue and City hospitals, hospitals of the Workhouse and Almshouse, Manhattan State Hospital for the Insane, Willard Parker and Reception hospitals, Riverside Hospital for Contagious Diseases, Randall's Island, Presbyterian, St. Luke's, St. Vincent's, General Memorial, Gouverneur, Columbus, Harlem, New York Foundling, and the Society for the Lying-in hospitals, the New York Eye and Ear Infirmary, and a large college dispensary are open to students of this school for a study of clinical cases. The Carnegie building, a new five-story structure adjoining the college, is devoted to laboratory instruction and investigation, and, with the other two large college buildings, affords good laboratory and lecture-room facilities. The course of instruction covers four years of eight months each. Actual clinical teaching, in conjunction with and founded on laboratory work, recitation and didactic teaching, is emphasized to the greatest possible degree. Fees: First year, $185; second and third, $180 each, and $195 for the fourth year. The Dean is Dr. Edward G. Janeway. Total registration for 1901-2 was 319; graduates, 48. The next session opens Oct. 1, 1902, and closes June 4, 1903.

Albany.

ALBANY MEDICAL COLLEGE.—This school was organized in 1838, and in 1873 it assumed its present relations, as Medical Department of Union University. The faculty is composed of 14 professors, 7 adjunct and clinical professors, and 30 lecturers, instructors and assistants, a total of 51. Albany, St. Peter's, Child's and County hospitals, South End Dispensary, Eye and Ear Infirmary and the Albany Hospital for Incurables, also the free dispensaries connected with each, are open to students for clinical study. The curriculum embraces graded work for four years of seven and one-half months each. Teaching is carried on in the laboratories, clinics and lecture rooms. Examinations are held twice a year in all subjects. Fees: Third year, $110, and $130 for each other year. The Dean is Dr. Albert Vander Veer. Total registration for 1901-2 was 154; graduates, 26. The next session opens Sept. 23, 1902, and closes May 5, 1903.

Buffalo.

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT.—This was organized in 1846 and has a faculty made up of 7 professors, 41 adjunct and clinical professors, and 31 lecturers, etc., a total of 79. Buffalo General Hospital, Hospital of the Sisters of Charity, Erie County and German hospitals and the German Deaconess' Hospital supply ample clinical material for study. A college dispensary, recently organized, is also of value in practical work. The buildings and hospitals are well equipped for clinical and laboratory work. Bedside instruction is insisted on and the senior students are permitted to assist in operations and give anesthetics. This school is a member of the Association of American Medical Colleges. The course covers four years of seven months each. The total fees are: First year, $455; second, $55, and $15 each for the third and fourth years. The Dean is Dr. Matthew D. Mann, 37 Allen St. Total registration for 1901-2 was 239; graduates, 38. The fifty-seventh session opens Sept. 29, 1902, and closes May 6, 1903.

Syracuse.

COLLEGE OF MEDICINE, SYRACUSE UNIVERSITY.—This school was organized in 1872, as the Medical Department of Syracuse University. The faculty is composed of 16 professors and 29 lecturers, instructors, etc., in all 45. Clinical facilities are furnished by St. Joseph's Hospital, with a capacity of 200 patients; Hospital of the House of the Good Shepherd, Syracuse Hospital for Women and Children, Onondaga County Orphan Asylum, and the Syracuse Free Dispensary. The laboratories and amphitheaters are large and well equipped. This school is a member of the Association of American Medical Colleges. The curriculum embraces a four years' graded course, eight months making a school year. The total fees for each of the four years are $130. The Dean is Dr. Henry D. Didama, 424 S. Salina St. Total number of students registered for 1901-2 was 128; graduates, 9. The next session opens Oct. 7, 1902, and closes June 10, 1903.

NORTH CAROLINA.

North Carolina, population 1,893,810, has three medical schools. They are, Leonard School of Medicine, North Carolina Medical College, and the University of North Carolina Medical Department.

Raleigh.

LEONARD SCHOOL OF MEDICINE.—This school was established in 1882 by the American Baptist Home Mission Society, for the purpose of training colored students of medicine. It is located in Raleigh, a city of 13,643, and has a faculty of 8 teachers. A free hospital and dispensary supply clinical material. A preliminary entrance examination is given to applicants not possessing a certificate or diploma of educational requirements. The course covers four years of six months each. The total fees for each year are $75. The dormitory plan is adopted generally, and board and room costs $2 a week. The Dean is Dr. James McKee. Total enrolment for 1901-2 was 106; graduates, 21. Next session opens Oct. 1, 1902, and closes April 14, 1903.

UNIVERSITY OF NORTH CAROLINA MEDICAL DEPARTMENT.—This school was organized in 1891, and formerly gave only the work of the first two college years, at Chapel Hill. In 1902 the course was extended to four years by the establishment of a department at Raleigh in which the last two years are given. Degrees will now be conferred and the faculty in the completed school of medicine numbers 25. It is a member of the Association of American Medical Colleges. The number of students enrolled in 1901-2 was 62. The President is Dr. F. P. Venable, Chapel Hill.

Davidson.

NORTH CAROLINA MEDICAL COLLEGE.—This school was organized in 1893 and has a faculty of 16. It is located at Davidson, a village of 904 people, and a small hospital supplies the clinical facilities. The course covers but three years of eight months each. The requirements for admission claimed are those established by the Association of American Medical Colleges. Fees: First and second

years, $85, and $100 for the third year. The President is Dr. J. P. Monroe. The total registration for 1901-2 was 55; graduates, 18. The session began Sept. 4, 1902, and closes May 11, 1903.

OHIO.

Ohio, population 4,157,545, has eleven medical colleges. Five of these, the Medical College of Ohio, Eclectic Medical Institute, Miami Medical College, Pulte Medical College and the Laura Memorial Woman's Medical College, are located in Cincinnati, a city of 325,902 inhabitants. The clinical advantages of Cincinnati are good; beside many smaller hospitals, the Cincinnati Hospital is open to the students for study. Board can be procured in Cincinnati for from $3 to $5 per week.

Cleveland, population 381,768, contains three medical schools: Western Reserve University Medical College, Cleveland College of Physicians and Surgeons and the Cleveland Homeopathic Medical College. The City Hospital, with 275 beds, is used in common by them for clinical study. Board and lodging can be had for from $2.50 to $5 a week.

Columbus, population 125,560, contains two: Starling Medical College and Ohio Medical University. Board and lodging cost from $2.50 to $5 per week.

Toledo, with 131,822 people, has one medical school: Toledo Medical College. It has good clinical advantages. Board and room can be had for from $3 to $5 per week.

The laws of Ohio require that in order to practice medicine in this state, any student not possessing a diploma or certificate showing that he is possessed of the educational advantages required, must pass a satisfactory examination, under the direction of the State Board of Medical Registration and Examination, in the following subjects: English, including rhetoric and spelling; geography, arithmetic, algebra, physics, botany, United States history and Latin equal to a year's work. This is the standard adopted by all the medical colleges in the state.

Cincinnati.

MEDICAL COLLEGE OF OHIO.—This is the Medical Department of the University of Cincinnati, organized in 1819, and has a faculty made up of 22 professors, 33 lecturers and assistants, a total of 55. Good Samaritan Hospital, with 150 beds; Cincinnati Hospital, with 550 beds, and a well-equipped college dispensary furnish clinical facilities. The buildings supply ample laboratory and lecture-room space, and their equipment is good. The course of study is graded and covers four years of seven months each. This school is a member of the Association of American Medical Colleges. The total fees are, for the first year, $105; for the second and third, $100 each, and $125 for the fourth year. Total registration of students for 1901-2 was 180; graduates, 47. The Dean is Dr. P. S. Conner, Cincinnati. The eighty-fourth session begins Oct. 1, 1902, and ends May, 1903.

ECLECTIC MEDICAL INSTITUTE.—This school, organized in 1845, has a faculty of 29 members. The Seton Hospital, Cincinnati Hospital, and a college dispensary furnish clinical material. It is a member of the National Confederation of Eclectic Medical Colleges. The course covers four years of twenty-eight weeks each. The fees are $75 for each year, with a graduation fee of $25. The Dean is Dr. F. J. Locke, Newport, Ky. Total enrolment, 1901-2, was 143; graduates, 36. The next session begins Sept. 22, 1902, and closes April 14, 1903.

MIAMI MEDICAL COLLEGE.—This school was organized in 1852 and has a faculty of 23 professors and 27 lecturers and demonstrators, a total of 50. The clinical facilities are furnished by the Cincinnati Hospital and a college dispensary. This college is a member of the Association of American Medical Colleges. The curriculum embraces a four-year graded course of seven months each. The total fees are, for the first year, $115; for the second and third, $110, and $130 for the fourth year. The Secretary is Dr. J. C. Oliver, 628 Elm St. The total registration for 1901-2 was 97; graduates, 31. The next session opens Oct. 1, 1902, and closes May 6, 1903.

PULTE MEDICAL COLLEGE.—Homeopathic. This was organized in 1872 and has a teaching force of 19 professors and 19 assistants, 38 in all. Pulte Hospital, Cincinnati Hospital, Bethesda Hospital, Home of the Friendless and Foundlings, and a college dispensary supply clinical material. The curriculum covers four years of seven months each. Fees: First year, $80; for the second and third, $75 each, and $100 for the fourth. The Dean is Dr. J. D. Buck. Total enrolment for 1901-2 was 40; graduates, 10. The next session opens Oct. 1, 1902, and closes May 5, 1903.

LAURA MEMORIAL WOMAN'S MEDICAL COLLEGE.—This school was formed in 1895 and has a faculty of 26. Presbyterian and Cincinnati hospitals and an extensive college dispensary supply material for clinical study. The out-patient department of the Presbyterian Hospital and interneship in the same hospital are open to students in this school exclusively. A special feature of instruction is a thoroughly equipped department in radiography. This college is a member of the Association of American Medical Colleges. The course embraces four years of study of seven months each. The total fees are $50 for each year. This includes all laboratory courses, which are ample in every facility. The Dean is Dr. John M. Withrow, Cincinnati. Total registration of students for 1901-2 was 26; graduates, 9. The next session opens Oct. 1, 1902, and closes May 5, 1903.

Cleveland.

WESTERN RESERVE UNIVERSITY MEDICAL COLLEGE.—The Medical Department was organized in 1843. Its teaching faculty includes 18 professors, 21 lecturers and demonstrators, and 12 assistants, a total of 51. Clinical facilities are offered students of this school by Lakeside Hospital, having 250 beds; St. Vincent's Hospital, having about 135 beds; City Hospital, with 250 beds; St. Alexis Hospital, with 100 beds, and the Home of Maternity, with the dispensary service at Lakeside and Charity hospitals. The new clinical laboratory has recently been added, where a systematic course of instruction is given. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of eight months each. The total fees are $125 for each year. The Dean is Dr. R. L. Millikin, 278 Prospect St. Total enrolment for 1901-2 was 126; graduates, 36. The next session begins Oct. 1, 1902, and ends June 23, 1903.

THE CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS.—This was organized in 1863 as Charity Hospital Medical College, became the Medical Department of Wooster University in 1869 and became the Medical Department of Ohio Wesleyan University in 1896. The faculty is composed of 25 professors, 33 associates, lecturers and assistants, 58 in all. Cleveland General Hospital, City Hospital, St. Alexis Hospital, St. John's Hospital and a college dispensary are available for clinical teaching. This school is a member of the Association of American Medical Colleges. The school holds a continuous session, two terms of four months each constitute a year's work. The total fees for the first two years are $130 each, and for the last two years, $117 and $110, respectively. The Dean is Dr. N. S. Scott, 531 Prospect St. Total enrolment for 1901-2 was 86; graduates, 30. The next term opens Sept. 17, 1902.

CLEVELAND HOMEOPATHIC MEDICAL COLLEGE.—This school was founded in 1890 by a consolidation of Cleveland University of Medicine and Cleveland Medical College. The faculty includes 27 professors and 21 adjuncts, lecturers, etc., 48 in all. The clinical facilities are obtained from the Cleveland Homeopathic Hospital, and a college dispensary. The course embraces four years of thirty weeks each. Fees: First year, $110; second and third years, $105 each, and $125 for the fourth year. The Dean is Dr. Gaius J. Jones. Total number of students registered, 1901-2, was 112; graduates, 23. The next session opens Sept. 17, 1902, and closes April 15, 1903.

Columbus.

STARLING MEDICAL COLLEGE.—This school was organized in 1847 and has a faculty composed of 13 professors and 16 lecturers, associates, etc., a total of 29. St. Francis Hospital, which is under the control of this faculty, Hawke's Hospital, of Mt. Carmel, the Lawrence Hospital for Women, and a college dispensary are available for clinical study. This college is a member of the Association of American Medical Colleges. The work covers four years of seven months each. Fees: First year, $73; second, $71; third, $60, and $80 for the fourth year. The Dean is Dr. Starling Loving. Enrolment for 1901-2 was 162; graduates, 32. The next session opens September, 1902, and closes April, 1903.

OHIO MEDICAL UNIVERSITY.—This school was organized in 1890 and has a faculty of 23 professors and 9 assistants, 32 in all. The Protestant Hospital, Ohio Penitentiary Hospital and a college dispensary provide material for clinical work. The amphitheaters and laboratories are well equipped. This school is a member of the Association of American Medical Colleges. The course is four years of seven months each. Fees: First year, $86; second year, $79; third, $51, and $61 for the fourth year. The Dean is Dr. George M. Waters. Total students for 1901-2 was 232; graduates, 61. The present session begins Sept. 17, 1902, and ends April 16, 1903.

Toledo.

TOLEDO MEDICAL COLLEGE.—This school was organized in 1882 and has a faculty of 18 professors, 15 lecturers and 6 assistants, in all 39. Toledo Hospital, St. Vincent's and Robinwood hospitals, Lucas County Infirmary Hospital, Toledo Hospital for the Insane, and a free dispensary supply good clinical facilities. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of seven months each. The fees are $75 for each year with a matriculation fee of $5, payable once. The Secretary is Dr. Park L. Myers, 1921 Franklin Ave. Total enrolment for 1901-2 was 52; graduates, 10. The next session opens Sept. 25, 1902, and closes April 23, 1903.

OREGON.

Oregon, population 413,536, has two medical colleges: Medical Department Willamette University, and University of Oregon, Medical Department.

Salem.

MEDICAL DEPARTMENT WILLAMETTE UNIVERSITY.—This school is situated in Salem, a town of 4,258 people, and was organized in 1864. The faculty consists of 15 teachers. Clinical facilities for study are supplied by Salem Hospital, and a college dispensary. This school is a member of the Association of American Medical Colleges. The course embraces four years' work of six months each. Fees: First year, $110; second, $100; third, $75; and $50 for the fourth year. Board and lodging costs from $3 to $5 a week. The Dean is Dr. W. H. Byrd, Salem. Total enrolment for 1901-2 was 27; graduates, 5. The next session begins Oct. 1, 1902, and ends April 2, 1903.

Portland.

UNIVERSITY OF OREGON MEDICAL DEPARTMENT.—This department of the State University was organized in 1887 and has a faculty of 15 professors and 11 special lecturers, a total of 26. It is situated in Portland, population 98,000. Good Samaritan and St. Vincent's hospitals, containing 200 and 350 beds, respectively, furnish good material for clinical study. The requirements for admission are those of the Association of American Medical Colleges. The college building is modern and well equipped, presenting ample teaching facilities. The course is four years of six months each. Fees: First year, $142.50; second, $107.50; third, $137.50, and for the fourth the only fee is $7.50 for examination fee. Board and room can be obtained for from $4 to $6 a week. The Dean

is Dr. Simeon E. Josephi, Portland. Total number of students for 1901-2 was 80; graduates, 20. The next session opens Oct. 1, 1902, and closes April, 1903.

PENNSYLVANIA.

Pennsylvania, population 6,302,115, has six medical colleges. Of these Philadelphia, having a population of 1,293,697, contains five, as follows: University of Pennsylvania Department of Medicine, Jefferson Medical College, Hahnemann Medical College, Woman's Medical College of Pennsylvania, and the Medico-Chirurgical College of Philadelphia. The clinical facilities of Philadelphia present abundant and varied material for study. Besides the individual hospitals connected with each of the schools the charity hospitals are open to all the students in common. Board and lodging costs from $4 a week upwards.

The other school, Western Pennsylvania Medical College, is situated in Pittsburg, a city of 321,616 people. The cost of board and lodging is from $4 to $6 a week.

A preliminary examination is required of all applicants for a license to practice medicine or surgery in the state. This examination is held at stated intervals by the State Examiners, and includes: (a) English composition, grammar and rhetoric; (b) mathematics, covering algebra and plane geometry; (c) elementary physics; (d) United States history, and (e) Latin equivalent to a year's study. Upon passing a successful examination a medical student certificate is issued to the applicant. This certificate will admit the possessor to matriculation in any medical college in the state.

Philadelphia.

UNIVERSITY OF PENNSYLVANIA DEPARTMENT OF MEDICINE.—This is the first medical college established in this country, having been organized in 1765 as the Medical Department of the College of Philadelphia; the first degrees were granted in 1768. When from the College of Philadelphia the University of Pennsylvania was organized in 1791, it became the Medical Department of the University, its present relation. The faculty is made up of 19 professors, 6 clinical professors, and 76 assistants, lecturers, etc., a total of 101. Abundant and varied clinical material is furnished by the University Hospital, where during 1900 there were 14,936 cases treated; Maternity Pavilion, with 50 beds; Philadelphia Hospital, containing 1000 beds; Pennsylvania, Children's and German hospitals, and the Southeastern Hospital and Dispensary. Special attention is paid to bedside instruction and to thoroughly practical work. Applicants for admission must furnish evidence of the education required to enter the academic department of the University. The buildings known as Medical Hall, Laboratory Hall and the Laboratory of Hygiene supply excellent laboratory and lecture-room facilities and they are well equipped. The course embraces study for four years of nine months each. The total fees for each year are $200 each, with a matriculation fee of $5 for the first year. The Dean is Dr. John Marshall. Total enrolment for 1901-2 was 542; graduates, 151. The next session opens Sept. 26, 1902, and closes on the third Wednesday in June, 1903.

JEFFERSON MEDICAL COLLEGE.—This school was organized in 1826, and has a faculty of 15 professors, 11 clinical and adjunct professors, and 58 lecturers, demonstrators, etc., a total of 84. Jefferson Hospital, together with its Maternity Department, are used exclusively by students of the school for clinical study. Bedside instruction is given daily to small sections of the senior class. In addition, the following hospitals are open for study of clinical cases: Pennsylvania, Philadelphia, St. Joseph's, German, Municipal and Wills Eye hospitals. This college is a member of the Association of American Medical Colleges. The course of study covers graded work of four years of eight months each. The laboratories are large and well equipped, a new five-story laboratory building having recently been added; the lecture rooms and amphitheaters are also ample. The tuition is $150 a year, with a matriculation fee of $5, paid but once. The Dean is Dr. James W. Holland. The total number of students for 1901-2 was 724; graduates, 140. The net session opens Oct. 1, 1902, and closes May 29, 1903.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL.—Homeopathic. This was organized in 1848 and has a faculty of 15 professors and 42 lecturers, instructors, etc., in all 57. Hahnemann College Hospital and Pennsylvania Hospital furnish material for clinical work. The requirements for admission are those established by the Intercollegiate Committee of the American Institute of Homeopathy. The work covers four years of thirty weeks each. Fees: For each year, $125; matriculation, $5; graduation, $30. Total number of students for 1901-2 was 269; graduates, 58. The Dean is Dr. Pemberton Dudley, Philadelphia. The next session begins Sept. 30, 1902, and will end May 14, 1903.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA.—This school was organized in 1850, and has a faculty of 11 professors, 19 clinical and assistant professors, and 23 lecturers, etc., in all 53. Clinical facilities are offered exclusively to this college by the Woman's Hospital, West Philadelphia Hospital for Women. Other clinical advantages offered are those of the Pennsylvania, German, Children's and Philadelphia hospitals, Wills Hospital for Diseases of the Eye and the Philadelphia Lying-in Charity. This school is a member of the Association of American Medical Colleges. The lecture-room and laboratory equipment is good. The curriculum covers four years of eight months each. Fees: First year, $141.50; second, $138.50; third, $135.50, and $100.50 for the fourth year. The Dean is Dr. Clara Marshall. Total enrolment for 1901-2 was 157; graduates, 28. The fifty-third session begins Sept. 24, 1902, and will end May 20, 1903.

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA.—This school was organized in 1881 and has a faculty made up of 16 professors, 13 emeritus, clinical and associate professors, and 45 lecturers, demonstrators, etc., 74 in all. Opportunities for clinical study are offered exclusively to students of this school by the Medico-Chirurgical Hospital, with 130 beds; Children's Hospital, containing 40 beds, and a maternity hospital having 40 beds. In common with other schools the following are used: Philadelphia, Pennsylvania, German, Samaritan, St. Joseph's, St. Agnes', St. Mary's, Methodist and the Philadelphia Lying-in hospitals. This school is a member of the Association of American Medical Colleges. With new laboratories, lecture rooms and fine clinical amphitheater this college is amply provided and the equipment is good. The work embraces four years of eight months each. Fees: $150 per annum. The Dean is Dr. Seneca Egbert, 4814 Springfield Ave. Total enrolment for 1901-2 was 447; graduates, 87. The next session opens Oct. 1, 1902, and will close May 23, 1903.

TEMPLE COLLEGE DEPARTMENT OF MEDICINE.—This department was opened in 1901 and has a faculty of 27. Besides the hospitals of Philadelphia, open to all students, Samaritan Hospital supplies clinical material. The course is five years of nine months each and instruction is given at night. The fees are $125 per year, matriculation, $5, paid once. The Dean is W. W. Fritz. Enrolment, 1901-2, was 35. The next session begins Sept. 15, 1902, and ends June 9, 1903.

Pittsburg.

WESTERN PENNSYLVANIA MEDICAL COLLEGE.—This is the Medical Department of the Western University of Pennsylvania, and was organized in 1886. The faculty is composed of 29 professors, and 39 associates, assistants, etc., 68 in all. Clinical material for study is furnished by a college dispensary, and the Emma Kaufman Clinic, Reineman Maternity Hospital, Mercy, South Side and St. John's hospitals. This school is a member of the Association of American Medical Colleges. Well-equipped laboratories provide ample facilities for individual work; the lecture-room space is sufficient. The course of study embraces graded work for four years of eight months each. Special attention is given to practical bedside work. The total fees are $130 for each year. The Dean is Dr. J. C. Lange. Total enrolment for 1901-2 was 327; graduates, 57. The next session begins Oct. 1, 1902, and will close May 28, 1903.

SOUTH CAROLINA.

South Carolina, population 1,340,316, has one medical college.

Charleston.

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA.—This is situated in Charleston, a city of 55,807 people, and was founded in 1823. The faculty is made up of 10 professors and 11 assistants, etc., 21 in all. The clinical facilities are those offered by the City Hospital, where surgical, obstetrical and medical instruction is given. Applicants for matriculation must show by certificate or examination that they possess the education required of second-grade teachers in the public schools. The course covers four years of six months each. The total fees for each of the first two years are $100, and $75 each for the last two. Board and room can be obtained for from $12 to $16 a month. The Dean is Dr. Francis L. Parker. Total enrolment for 1901-2 was 89; graduates, 4. The next session opens Oct. 1, 1902, and closes April, 1903.

TENNESSEE.

Tennessee, population 2,020,616, has ten medical colleges. Of these the Medical Department of the University of Nashville, Vanderbilt University Medical Department, University of Tennessee Medical Department, and Meharry Medical College are situated in Nashville, a city with a population of 80,865. The City Hospital, containing 100 beds, is used by all the schools in common for clinical study. Board and lodging cost from $3 to $4 a week. Knoxville, population 32,637, contains two colleges, Tennessee Medical College and Knoxville Medical College. The cost of room and board in that city is from $2.50 to $4 a week. Chattanooga Medical College and Chattanooga National Medical College are situated in Chattanooga, a city of 30,154 people. Board and lodging cost there from $1.50 a week upwards. There is one college, Memphis Hospital Medical College, located in the growing city of Memphis, population 102,320. Good board can be obtained for from $3 to $4 a week. The other school, the Sewanee Medical College, is located at Sewanee, a mountain town of 1200 people.

Nashville.

MEDICAL DEPARTMENT UNIVERSITY OF NASHVILLE.—This school, established in 1850, has a faculty of 14 professors and 13 lecturers, assistants, etc., in all 27. This school is a member of the Southern Medical College Association. The course of study covers four years of twenty-six weeks each. The total fees for each of the four years are $65. The Dean is Dr. William G. Ewing. Total enrolment for 1901-2 was 257; graduates, 34. The next session begins Oct. 1, 1902, and ends April 2, 1903.

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874, and in 1895, when the present medical building was completed, the course was extended, the standard raised, and the present faculty, consisting of 15 professors and 20 associates, lecturers, etc., appointed. The school is a member of the Southern Medical College Association. The course covers four years of six months each. The total fees for the first three years are $105 each, and $130 for the fourth year. The Dean is Dr. William L. Dudley, Nashville. Total enrolment for 1901-2 was 160; graduates, 16. The next session begins Oct. 1, 1902, and ends April 3, 1903.

UNIVERSITY OF TENNESSEE MEDICAL DEPARTMENT.—This was organized in 1876 as the Nashville Medical College; its present relations were assumed in 1879. The faculty is composed of 14

professors and 13 lecturers, assistants, etc., 27 in all. The school is a member of the Southern Medical College Association. The course of study includes work for four years of six months each. The total fees for each of the first three years are $90, and $65 for the fourth year. The Dean is Dr. Paul F. Eve, 614 Broad St. Total enrolment for 1901-2 was 162; graduates, 18. The next session begins Oct. 1, 1902, and ends April, 1903.

MEHARRY MEDICAL COLLEGE OF WALDEN UNIVERSITY.—Colored. This school was organized in 1876 as the Medical Department of Central Tennessee College, now Walden University, "for the purpose of furnishing to the colored people of the South an opportunity of obtaining a medical education." The faculty is made up of 9 professors and 11 instructors, demonstrators, etc., 20 in all. This school is a member of the Association of American Medical Colleges. The work embraces a four-year graded course, six months to the year. The total fees for the first three years are $40 each, and $50 for the fourth year. The Dean is Dr. G. W. Hubbard. Total registration for 1901-2 was 233; graduates, 55. The twenty-seventh session begins Sept. 3, 1902.

Knoxville.

TENNESSEE MEDICAL COLLEGE.—This school was organized in 1889, and has a faculty of 13 professors and 6 assistants, 19 in all. City General Hospital and a free dispensary supply material for a study of clinical cases. This school is a member of the Southern Medical College Association. The curriculum includes graded work for four years of six months each. Fees: First year, $75; second, $70; third, $67.50, and $94 for the fourth year. The Secretary is Dr. Henry J. Kelso. Total number of students for 1901-2 was 49; graduates, 23. The fourteenth session begins Oct. 1, 1902, and closes April 1, 1903.

KNOXVILLE MEDICAL COLLEGE.—Colored. This school was established in 1900, following the discontinuance of the Medical Department of Knoxville College, organized in 1895. The teaching force comprises 11 professors. The City Hospital and a college dispensary supply clinical material. Applicants for admission not possessing a certificate of the necessary educational requirements "must pass a satisfactory examination." The course covers four years of six months each. Fees: First year, $42; second, $37; third, $30, and $40 for the fourth year. The Dean is Dr. E. L. Randall. Total number of students for 1901-2 was 37; graduates, 3. The next session opens Dec. 1, 1902, and closes May 26, 1903.

Chattanooga.

CHATTANOOGA MEDICAL COLLEGE.—This is the Medical Department of Grant University and was organized in 1889. The faculty is made up of 10 professors, and 22 demonstrators, instructors, etc., 32 in all. Clinical facilities are supplied by the wards of Erlanger Hospital, County Poor Asylum, free public dispensary of the college, and the City Physician's Office, which is maintained in the college building. The requirements for entrance are those of the Southern Medical College Association. The facilities have been increased by the completion of another four-story building at a cost of over $25,000, in which much new equipment has been installed. The course of work covers four years of six months each and is graded. The total fees for the first, third and fourth years are $75 each, and $85 for the second year. The Dean is Dr. E. A. Cobleigh. Total enrolment for 1901-2 was 252; graduates, 41. The fourteenth session begins Oct. 8, 1902, and ends April 13, 1903.

CHATTANOOGA NATIONAL MEDICAL COLLEGE.—Colored. This was organized in 1898. It has a teaching force of 18. The course covers four years of seven months each. The total fees are $50 each year with an additional graduation fee of $20. Total enrolment for 1901-2 was 26; graduates, 7. The Dean is Dr. T. W. Haigler 602 E. 8th St. The present session began Sept. 2, 1902, and ends March 28, 1903.

Memphis.

MEMPHIS HOSPITAL MEDICAL COLLEGE.—This school, organized in 1878, has a faculty of 10 professors and 18 assistants, beside quiz masters. Excellent clinical facilities are furnished by the City Hospital, Presbyterian Hospital, St. Joseph's Hospital and the East End Dispensary, the latter being located in the college building. The course includes graded work for four years of six months each. The total fees for the first three years are $75; for the fourth, $105. The Dean is Dr. W. B. Rogers. Total registration for 1901-2 was 687; graduates, 171. The twenty-third annual session will begin Nov. 1, 1902, and close April, 1903.

Sewanee.

SEWANEE MEDICAL COLLEGE.—This is a three-year school, the Medical Department of the University of the South. It was organized in 1891 and has a faculty of 22. The college is a member of the Southern Medical College Association. The course has been three years of six months each, but beginning with 1902 four years will be required. The fees are $65 for each of the first two years, $55 for the third and $75 for the last year. The Dean is Dr. John S. Cain. Total enrolment for 1901-2 was 227; graduates 81. The eleventh session commenced May 1, 1902, and will close the last of January, 1903.

TEXAS.

Texas, population 3,048,710, has four medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 37,789 inhabitants. Good board and room can be procured for from $15 to $20 a month. The Medical Department of Fort Worth University is at Fort Worth, population 26,888. The cost of board and room in that city is from $12 to $15 a month. The other two colleges, University of Dallas Medical Department and Dallas Medical College, are situated in Dallas, population 42,638.

Galveston.

UNIVERSITY OF TEXAS MEDICAL DEPARTMENT.—This department of the State University was organized in 1891 and has a faculty of 22. The John Sealy Hospital, also having an outdoor department, and St. Mary's Infirmary supply good material for clinical study. The requirements for admission are proof, either by certificate or examination, that the candidate is sufficiently proficient in English, including grammar, composition and rhetoric; mathematics through plane geometry and algebra including quadratics, and general history. The curriculum embraces graded work for four years of eight months each. Fees, to residents of the state: First year, $50; second and third each $20, and $5 for the fourth. Non-residents of the state are required to pay an additional fee of $50 each year. The Dean is Dr. Henry P. Cooke. Total registration for 1901-2 was 167; graduates, 13. The twelfth session begins Oct. 1, 1902, and ends May 30, 1903.

Fort Worth.

MEDICAL DEPARTMENT OF FORT WORTH UNIVERSITY.—This school was organized in 1894, and has a faculty of 17 professors, and 14 lecturers, assistants, etc., in all 31. Clinical facilities are supplied by St. Joseph's Hospital, with 200 beds; the Benevolent Home, containing 75 beds; the Delia Collins' Rescue Home, having 50 beds, and a college dispensary. The school is a member of the Southern Medical College Association. Instruction is carried on by laboratory, didactic and clinical study. The course covers four years of six months each. The total fees for each of the first three years are $75, and $100 for the fourth year. The Dean is Dr. Bacon Saunders. The total enrolment for 1901-2 was 141; graduates, 17. The next session opens Oct. 1, 1902, and closes April 7, 1903.

Dallas.

UNIVERSITY OF DALLAS MEDICAL DEPARTMENT.—This school has completed its second year. The faculty numbers 27. Parkland Hospital, with 90 beds; St. Paul's Sanitarium, Good Samaritan, and Policlinic Infirmary and a college dispensary and hospital are utilized for clinical study. The course covers four years of six months each. The school is a member of the Association of Southern Medical Colleges. The fees are $75 for each of the four years, with a matriculation fee of $5, paid once, and a graduation fee of $25. The Dean is Dr. E. H. Cary. Total registration for 1901-2 was 98; graduates, 9. The third session opens Oct. 1, 1902, and closes April 1, 1903.

DALLAS MEDICAL COLLEGE.—This school became the Medical Department of Trinity University in 1901 and has completed two sessions. It began as a three-year school but now requires four years of six months each. It has a faculty of 30 professors and 13 adjuncts and assistants. The Parkland Hospital with 90 beds; St. Paul Sanitarium, with 150 beds: The Medical College Hospital and College Dispensary supply clinical material. The requirements for admission are those of the Association of American Medical Colleges. Fees are $75 each year; matriculation fee, $5, payable but once; graduation fee, $25. The Dean is Dr. Hugh L. McNew. Total enrolment, 1901-2, was 91; graduates, 10. The third session begins Oct. 1, 1902, and ends April 1, 1903.

PHYSIO-MEDICAL COLLEGE OF TEXAS.—This new school has a faculty of 26. The requirements for admission are a diploma or its equal or an examination in English grammar, arithmetic, elementary physics, United States history, geography and Latin. The course is four years of twenty-six weeks each. The fees are, first year, $70; fourth year, $85; other years, $65. Enrolment, 1901-2, 20; graduates, 3. The next session opens Oct. 14, 1902, and closes April 16, 1903. The Secretary is Dr. R. L. Spann.

VERMONT.

Vermont, population 343,641, has one medical school.

Burlington.

MEDICAL DEPARTMENT, UNIVERSITY OF VERMONT.—This school is located at Burlington, a town of 18,640 people; it was organized in 1822, but suspended from 1836 until 1854, when it was reorganized. The faculty consists of 20 professors, and 14 adjuncts, instructors, etc., in all 39. The Mary Fletcher Hospital and a free dispensary furnish material for clinical instruction. Applicants for admission must show by certificate or examination sufficient knowledge of the following: English, including grammar, orthography and composition; geography, United States history, arithmetic and elementary physics. The laboratory and lecture-room space and equipment are good. The course of study embraces graded work for four years of six months each. The total fees for each of the first taree years are $115, and $140 for the fourth year. Board and room costs from $3.50 to $5 a week. The Secretary is Dr. B. J. Andrews. Total registration of students for 1901-2 was 210; graduates, 32. The fiftieth session begins Jan. 2, 1903, and ends June 26, 1903.

VIRGINIA.

Virginia, population 1,854,184, has three medical colleges. The University of Virginia Department of Medicine is situated in Charlotteville (population 6449). Board and room can be obtained for $18 a month and upward. The other two colleges, Medical College of Virginia and University College of Medicine, are located at Richmond (population 85,050). The clinical facilities are good. Board and room can be obtained for from $12 to $20 a month.

Charlotteville.

UNIVERSITY OF VIRGINIA MEDICAL DEPARTMENT.—This school was organized in 1825, and has a faculty of 27. A free dispensary and the new four-story hospital furnish clinical facilities. The requirements for admission are those of the Association of American Medical Colleges. The course is four years of nine months each. Fees: First year, $110; second, $100; third, $80, and $60 for the fourth year. Total enrolment for 1901-2 was 211; graduates, 53. The seventy-ninth session opens Sept. 15, 1902, and closes June 17, 1903.

Richmond.

MEDICAL COLLEGE OF VIRGINIA.—This school was organized in 1838 as the Medical Department of Hampden Sidney College, and

in 1854 the present name was assumed. The faculty is made up of 15 professors, and 21 lecturers, instructors, etc., a total of 36. Clinical material is furnished by the Old Dominion Hospital, Maternity Hospital, and the City Free Dispensary; an outside obstetric department also furnishes opportunities for clinical work. The magnificent new Memorial Hospital, which will be completed at about the opening of the session of 1902-3, will be under the exclusive control of this college for clinical purposes. The State Penitentiary, City Almshouse, and other public charities and asylums of the city, also afford opportunities for clinical work. This school is a member of the Southern Medical College Association. The buildings are large and contain well-equipped laboratories and amphitheaters. The course embraces four years of seven months each. The fees are $65 for each year, with an additional graduation fee of $30. The Dean is Dr. Christopher Tompkins. Total registration for 1901-2 was 212; graduates, 13. The next session begins Sept. 30, 1902, and will end May 12, 1903.

UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1893 and has a faculty of 18 professors, 34 lecturers, assistants, etc., a total of 52. Good clinical facilities are furnished by Virginia Hospital, with a maternity department and annex which was built especially for the purpose of affording clinical instruction; Richmond Eye, Ear and Throat Infirmary, containing 34 beds; the City Hospital, and a college dispensary. Applicants for matriculation must show by certificate or examination to be possessed of a certain proficiency in English, mathematics and Latin. The laboratory and lecture-room space and equipment are ample, but the school lays especial importance on the careful instruction and guidance of each student. The curriculum covers four years of seven and one-half months each. The total fees are $85 for each year. The Dean is Dr. J. Allison Hodges, Richmond. Total enrolment for 1901-2 was 194; graduates, 8. The next session begins Sept. 30, 1902, and ends May 14, 1903.

WISCONSIN.

Wisconsin, population 2,069,042, has two medical colleges, the Milwaukee Medical College and Wisconsin College of Physicians and Surgeons. They are both situated in Milwaukee, a city of 285,315 people. Clinical facilities are furnished them in common by the County Hospital, with 175 beds, and the Milwaukee Hospital for the Insane. Board and lodging can be had for from $3 to $5 a week.

Milwaukee.

MILWAUKEE MEDICAL COLLEGE.—This school was organized in 1893, and has a faculty of 22 professors, 7 associates, and 28 lecturers, instructors, etc., a total of 57. Good clinical material is furnished by Trinity, St. Mary's, and the County hospitals, Milwaukee Hospital for the Insane, and a college dispensary. This school is a member of the Association of American Medical Colleges. Ample laboratory and amphitheater facilities are afforded. The course covers four years of seven months each. The total fees are $120 each for the first three years, and $130 for the fourth year. The President is Dr. William H. Earles. Total number of students for 1901-2 was 184; graduates, 28. The ninth session begins Oct. 1, 1902, and will close May 4, 1903.

WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS.—This college was organized in 1893, and has a faculty composed of 28 professors, and 23 associates, assistants, etc., a total of 51. St. Joseph's Hospital, containing 150 beds; Wisconsin Maternity Hospital, a college dispensary and the material used in common with the other school supply ample facilities for clinical study. The school is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are well equipped. The curriculum includes four years of eight months each. Fees: Matriculation, paid once, $5; general ticket $100; for the use of microscope, a fee of $2 is charged for each course. The Secretary is Dr. W. H. Washburn. Total enrolment for 1901-2 was 125; graduates, 19. The next session begins Sept. 30, 1902, and ends May 28, 1903.

OKLAHOMA.

Oklahoma, population 398,331, may have one medical college in the immediate future. A charter has been obtained, a partial faculty of 18 selected and plans laid to open Oct. 1, 1902. The name will be the Oklahoma City Medical College and it will be controlled by the rules of the Association of American Medical Colleges. The session will close April 1, 1903. The city of Oklahoma has a population of 10,037 and contains two hospitals, aggregating 100 beds.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

The requirements for admission to be maintained by colleges belonging to this Association are as follows:

SECTION 1.—Each college holding membership in this Association shall require of each student, *before admission* to its course of study, an examination, the minimum of which shall be as follows:

1. In *English*, a composition on some subject of general interest. This composition must be written by the student at the time of the examination, and should contain at least 200 words. It should be criticised in relation to thought, construction, punctuation, spelling, and handwriting.

2. In *Arithmetic*, such questions as will show a thorough knowledge of common and decimal fractions, compound numbers, and ratio and proportion.

3. In *Algebra*, such questions as will bring out the student's knowledge of the fundamental operations, factoring, and simple quadratic equations.

4. In *Physics*, such questions as will discover the student's understanding of the elements of mechanics, hydrostatics, hydraulics, optics, and acoustics.

5. In *Latin*, an examination on such elementary work as the student may offer, showing a familiarity usually attained by one year of study; for example, the reading of the first 15 chapters of Cæsar's Commentaries, and the translation into Latin of easy English sentences involving the same vocabulary.

SEC. 2.—In place of this examination, or any part of it, colleges, members of this Association, are at liberty to recognize the official *certificates of reputable* literary and scientific colleges, academies, high schools, and normal schools, and also the medical student's certificate issued by any state examining board covering the work of the foregoing entrance examination.

SEC. 3.—Colleges, members of this Association, may allow students *who fail in one or more branches* in this entrance examination the privilege of entering the first-year course, but such students shall not be allowed to begin the second course until the entrance requirements are satisfied.

SEC. 4.—Colleges, members of this Association, are free to honor official *credentials issued by medical colleges of equal requirements*, except in the branches of study embraced in the last year of their own curriculum.

SEC. 5.—Candidates for the degree of Doctor of Medicine in the year 1899 and thereafter shall have attended at least *four courses* of medical instruction, each course of at least six months' duration, no two courses of which shall have been in the same calendar year.

SEC. 6.—Colleges, members of this Association, are free to give to students who have met the entrance requirements of the Association additional *credit for time* on the four years' course as follows: (*a*) To students having the A.B., B.S., or equivalent *degree* from reputable literary colleges, one year of time; (*b*) To graduates and students of colleges, of *homeopathic or eclectic* medicine, as many years as they attended those colleges, provided they have met the previous requirements of the Association and that they pass an examination in materia medica and therapeutics; (*c*) To graduates of reputable colleges of *dentistry, pharmacy,* and *veterinary* medicine, one year of time.

SEC. 7.—A college not giving the whole four courses of the medical curriculum, and not graduating students, but otherwise eligible, may be admitted to membership.

Further information may be had of the Secretary, Dr. W. S. Hall, Berwyn, Chicago.

THE SOUTHERN MEDICAL COLLEGE ASSOCIATION.

The following extracts from the Constitution show a portion of the regulations controlling matriculants:

ART. IV. SEC. 3. He must possess a diploma of graduation from some literary or scientific institution of learning, or a certificate from some legally constituted high school, general superintendent of state education, or superintendent of some county board of public education, attesting that he has been regularly examined and is possessed of at least the educational attainments required of first grade teachers of public schools or a certificate that he has passed the entrance examination to a university; and a student may be given one month, from the date of his admission, to submit his certificate of qualification.

A candidate for graduation, among other provisions, "must have attended, in a regular and reputable medical college, four full courses of lectures, of not less than six months (26 weeks) each, in four separate years, which is construed to mean, that no two courses shall either commence or close in the same calendar year—that is, between the 1st of January and the ensuing 31st of December." (Art. VI, Sec. 2.)

The Secretary is Dr. G. C. Savage, Nashville, Tenn.

AMERICAN INSTITUTE OF HOMEOPATHY.

The minimum requirements for entrance into the freshman class of all homeopathic medical colleges, as adopted in 1901, are, with abbreviation, as follows:

1. English Composition. Exercise on assigned theme, not less than 200 words. Exercise in reading. Exercise in correction of ungrammatical sentences.

2. Mathematics. Arithmetical exercises in (a) vulgar fractions; (b) decimals; (c) percentage; (d) proportion; (e) square and cube root; (f) weights and measures; (g) decimal system. Mensuration. (a) Definition of terms: (b) exercises under the more fundamental rules.

3. Geography (general facts about North America).

4. History. General, with particular reference to human progress in art, science and letters. (The examination to avoid exact dates and minor details.)

5. Latin Language. (a) Grammar; (b) four books of Cæsar, or its equivalent.

The colleges recognized as in good standing by this organization are: Hahnemann Medical College of the Pacific; Denver Homeopathic Medical College; Hahnemann Medical College, Chicago; Chicago Homeopathic Medical College; Hering Medical College; Homeopathic Medical Department of the State University of Iowa; Southwestern Homeopathic College; Kansas City Hahnemann Medical College; Southern Homeopathic Medical College; Boston University School of Medicine; Homeopathic Medical College of University of Michigan; College of Homeopathic Medicine and Surgery of University of Minnesota; Homeopathic Medical College of Missouri; New York Homeopathic Medical College; New York Medical College; Cleveland Homeopathic Medical College; Pulte Medical College; Hahnemann Medical College of Philadelphia.

CANADA.

The Dominion of Canada, with a population of 5,335,055, distributed through seven provinces and the Northwest territories, an area which reaches from the Atlantic to the Pacific, contains only 12 medical colleges. Of these, 5 are situated in Ontario, 4 in the province of Quebec, 2 in Nova Scotia, and one in Manitoba. One of the five colleges in Ontario is merely a teaching body; it does not confer degrees, since it is not in

Name of College.	Population of city in which coll. is located.	No. students registered, Session 1901-2.	Graduates, 1902.	Total No. teachers.	No. of weeks in college year.	Total graduates all colleges in state, 1902.	Total students all colleges in state, 1901-2.	Population of state.	No. of physicians in state.	No. of population to one physician.
ALABAMA						21	218	1,828,697	2200	832
Birmingham Medical College.—R	38,415	82	8	20	24					
Medical College of Alabama.—R	38,469	136	13	26	24					
ARKANSAS						11	220	1,311,564	2500	525
Medical Department Arkansas University.—R	54,587	220	11	23	26					
CALIFORNIA						118	895	1,485,053	3800	391
California Medical College.—E	342,782	84	6	28	32					
College of Physicians and Surgeons, San Francisco.—R	"	180	41	47	32					
Cooper Medical College.—R	"	214	25	35	32					
Hahnemann Hospital College of San Francisco.—H	"	45	8	38	28					
University of California, Medical Department.—R	"	151	24	64	32					
West Coast Medical College.—R	"	119								
College of Medicine, University of Southern California.—R	102,479	102	14	34	32					
COLORADO						58	230	539,700	1400	358
Colorado School of Medicine.—R	6,150	63	13	25	36					
Denver Homeopathic College.—H	133,859	34	10	32	28					
Denver and Gross College of Medicine.—R	"	133	35	91	32					
CONNECTICUT						20	145	908,420	1400	649
Yale University, Medical Department.—R	115,000	145	20	51	32					
DISTRICT OF COLUMBIA						75	569	278,718	1000	278
Howard University, Medical Department	278,718	145	27	25	28					
Medical Department, Columbian University.—R	"	257	26	52	32					
National University Medical Department.—R	"	37	9	37	32					
University of Georgetown School of Medicine.—R	"	130	13	55	32					
GEORGIA						179	436	2,216,331	3300	672
Atlanta College of Physicians and Surgeons.—R	89,872	257	111	28	24					
Georgia College of Eclectic Medicine and Surgery.—E		58	21	12	24					
Medical College of Georgia.—R	39,441	121	41	20	24					
ILLINOIS						575	3491	4,821,550	8800	548
American Medical Missionary College.—R	1,698,575	92	24	25	36					
Bennett College of Eclectic Medicine and Surgery.—E	"	104	21	39	26					
Chicago Homeopathic Medical College.—H	"	130	35	68	30					
College of Medicine and Surgery.—Ph.M	"	40	9	31	28					
College of Physicians and Surgeons, Chicago.—R	"	692	220	115	32					
Dunham Medical College.—H	"	82	19	31	28					
Hahnemann Medical College and Hospital.—H	"	185	49	52	28					
Harvey Medical College.—R	"	307	28	63	40					
Hering Medical College.—H	"	72	13	39	28					
Illinois Medical College.—R	"	228	21	43	24					
Jenner Medical College.—R	"	105	18	35	44					
Northwestern University Medical School.—R	"	465	96	93	36					
Rush Medical College.—R	"	803	211	194	36					
National Medical University	"	150	11	54	36					
American College of Medicine and Surgery	"	36	....	50	32					
INDIANA						96	483	2,516,462	5100	493
Central College of Physicians and Surgeons.—R	169,164	70	8	73	24					
Medical College of Indiana.—R	"	311	75	64	28					
Physio-Medical College of Indiana.—Ph.M	"	31	4	29	26					
Eclectic Medical College of Indiana.—E	"	25	....	31	24					
Fort Wayne College of Medicine.—R	45,115	46	9	33	28					
IOWA						119	681	2,231,853	4100	544
Keokuk Medical College of Physicians and Surgeons.—R	14,641	247	52	18	28					
Iowa College of Physicians and Surgeons.—R	62,139	64	10	23	36					
Sioux City College of Medicine.—R	33,111	63	10	15	32					
State University of Iowa, Homeopathic Medical Dept.—H	7,987	59	7	19	36					
State University of Iowa, Medical Department.—R	"	248	40	38	36					
KANSAS						43	172	1,470,495	2700	545
College of Physicians and Surgeons of Kansas City.—R	55,000	73	27	37	28					
Kansas Medical College.—R	33,608	99	16	33	26					
KENTUCKY						199	1383	2,147,174	4000	537
Hospital College of Medicine.—R	204,731	408	65	41	24					
Kentucky School of Medicine.—R	"	295	45	38	26					
Louisville Medical College.—R	"	219	29	23	24					
Louisville National Medical College.—R	"	....	7	15	28					
Southwestern Homeopathic Medical College.—H	"	27	4	31	28					
Medical Department, University of Louisville.—R	"	180	31	37	24					
Kentucky University, Medical Department.—R	"	238	18	33	26					
Medical Department, State University.—R	"	16	....	12	24					
LOUISIANA						57	408	1,381,625	1500	921
New Orleans University, Medical Department.—R	287,104	47	4	11	20					
Tulane University, Medical Department.—R	"	361	53	40	24					
MAINE						4	90	694,466	1300	534
Medical School of Maine, Bowdoin College.—R	5,210	90	4	18	26					
MARYLAND						433	1683	1,188,044	2200	504
Baltimore Medical College.—R	508,957	532	93	52	28					
Baltimore University School of Medicine.—R	"	63	31	28	24					
College of Physicians and Surgeons of Baltimore.—R	"	305	58	50	28					
Medical Department, Johns Hopkins University.—R	"	229	123	69	34					
Southern Homeopathic Medical College.—H	"	35	9	34	28					
University of Maryland, School of Medicine.—R	"	366	76	59	28					
Woman's Medical College of Baltimore.—R	"	25	4	27	32					
Maryland Medical College.—R	"	128	39	28	32					
MASSACHUSETTTS						234	1087	2,805,346	6300	445
Boston University School of Medicine.—H	560,892	125	23	32	58					
College of Physicians and Surgeons.—R	"	131	9	36	32					
Harvard University Medical School.—R	"	496	167	36	36					
Tufts' College Medical School.—R	"	335	35	53	32					
MICHIGAN						247	1098	2,420,982	4600	526
Detroit College of Medicine.—R	285,704	242	48	95	28					
Detroit Homeopathic Medical College.—H	"	45	6	37	28					
Michigan College of Medicine and Surgery.—R	"	75	13	30	28					
Grand Rapids Medical College.—R	87,565	73	47	31	24					
Saginaw Valley Medical College.—R	42,345	100	41	30	28					
University of Michigan Dept. of Medicine and Surgery.—R	14,509	508	84	67	36					
University of Michigan Homeopathic Medical College.—H	"	55	8	11	36					
MINNESOTA						98	522	1,751,394	1850	947
College of Homeopathic Med. and Surg., Univ. of Minn.—H	202,718	21	3	29	34					
College of Medicine and Surgery, Univ. of Minnesota.—R	"	362	61	81	36					
Medical Department of Hamline University.—R	"	139	34	47	36					

Name of College.	Population of city in which coll. is located.	No. students registered, Session 1901-2.	Graduates, 1902.	Total No. teachers.	No. of weeks in college year.	Total graduates all colleges in state, 1902.	Total students all colleges in state, 1901-2.	Population of state.	No. of physicians in state.	No. of population to one physician.
MISSOURI						366	2459	3,106,665	6300	493
Medico-Chirurgical College.—R	163,752	87	13	41	24					
Woman's Medical College.—R	"	16	6	42	28					
University Medical College of Kansas City.—R	"	225	27	46	24					
Kansas City Hahnemann Medical College.—H	"	72	10	32	28					
Kansas City Medical College.—R	"	111	21	45	28					
Eclectic Medical University.—E	"	49	12	20	24					
Central Medical College.—R	102,979	82	11	30	24					
Ensworth Medical College.—R	"	80	14	31	24					
Barnes' Medical College.—R	575,238	501	78	44	28					
Marion-Sims-Beaumont College of Medicine.—R	"	488	55	76	28					
St. Louis College of Physicians and Surgeons.—R	"	280	50	44	28					
American Medical College.—E	"	69	14	33	28					
Homeopathic Medical College of Missouri.—H	"	67	12	31	28					
Medical Department, Washington University.—R	"	242	43	60	30					
University of the State of Missouri.—R	5,651	90	....	30	36					
NEBRASKA						96	402	1,066,300	1500	711
University of Nebraska College of Medicine	102,555	153	38	46	32					
John A Creighton Medical College.—R	"	151	37	42	32					
Lincoln Medical College of Cotner University.—E	40,169	98	21	25	32					
NEW HAMPSHIRE						15	72	411,588	730	564
Dartmouth Medical College.—R	1,825	72	15	20	32					
NEW YORK						396	2507	7,268,894	12,300	591
Albany Medical College.—R	94,151	154	26	51	30					
College of Physicians and Surgeons.—R	3,437,202	778	145	109	32					
Cornell University Medical College.—R	"	415	53	134	36					
Eclectic Medical College.—E	"	100	7	35	28					
Long Island College Hospital.—R	"	245	31	69	30					
New York Homeopathic Medical College and Hospital.—H	"	106	23	48	28					
New York Medical College and Hospital for Women.—H	"	36	6	44	26					
University and Bellevue Hospital Medical College.—R	"	319	48	113	32					
Syracuse University College of Medicine.—R	108,374	128	19	45	32					
University of Buffalo, Medical Department.—R	352,387	239	38	79	28					
NORTH CAROLINA						39	223	1,893,810	1600	1184
Leonard Medical School.—R	13,643	106	21	8	24					
North Carolina Medical College.—R	904	55	18	16	32					
Medical Department, University of North Carolina	13,643	62	....	25	32					
OHIO						325	1255	4,157,545	8650	481
Western Reserve University Medical College.—R	381,768	126	36	51	32					
Cleveland College of Physicians and Surgeons.—R	"	86	30	58	32					
Cleveland Homeopathic Medical College.—H	"	112	23	48	30					
Eclectic Medical Institute.—E	325,902	142	36	29	28					
Laura Memorial Woman's Medical College.—R	"	26	9	26	28					
Medical College of Ohio.—R	"	180	47	55	28					
Pulte Medical College.—H	"	40	10	38	28					
Miami Medical College.—R	"	97	31	50	28					
Ohio Medical University.—R	125,560	232	61	32	28					
Starling Medical College.—R	"	162	32	29	28					
Toledo Medical College.—R	131,822	52	10	39	28					
OREGON						25	107	413,536	900	460
University of Oregon Medical Department.—R	98,000	80	20	26	24					
Medical Department, Willamette University.—R	4,258	27	5	15	24					
PENNSYLVANIA						457	2501	6,302,115	9700	650
Temple College of Phila., Dept. of Medicine	1,293,697	35	....	27	36					
University of Pennsylvania Department of Medicine.—R	"	542	151	101	36					
Hahnemann Medical College and Hospital.—H	"	269	58	57	30					
Jefferson Medical College.—R	"	724	140	84	32					
Woman's Medical College of Pennsylvania.—R	"	157	28	53	32					
Medico-Chirurgical College of Philadelphia.—R	"	447	23	74	32					
Western Pennsylvania Medical College.—R	321,616	327	57	68	32					
SOUTH CAROLINA						4	89	1,340,316	1200	1117
Medical College of the State of South Carolina.—R	55,807	89	4	21	24					
TENNESSEE						449	2120	2,020,616	3700	546
Tennessee Medical College.—R	32,637	79	23	19	24					
Knoxville Medical College.—R	"	37	3	11	24					
Medical Department of University of Nashville.—R	"	257	34	27	26					
Vanderbilt University Medical Department.—R	"	160	16	35	24					
University of Tennessee, Medical Department.—R	80,865	162	18	27	24					
Meharry Medical College.—R	"	233	55	20	24					
Memphis Hospital Medical College.—R	102,320	687	171	....	....					
Sewanee Medical College.—R	1,200	227	81	22	24					
Chattanooga National Medical College.—R	30,154	26	7	18	28					
Chattanooga Medical College.—R	"	252	41	32	24					
TEXAS						62	517	3,048,710	5200	586
Medical Department Fort Worth University.—R	26,688	141	17	31	24					
University of Texas Department of Medicine.—R	37,789	167	13	22	32					
University of Dallas Medical Department.—R	42,638	98	19	27	24					
Physio-Medical College of Texas	"	20	3	26	26					
Dallas Medical College.—R	"	91	10	43	24					
VERMONT						32	210	343,641	775	443
University of Vermont Medical Department.—R	18,640	210	32	39	24					
VIRGINIA						74	617	1,854,184	2225	833
Medical College of Virginia.—R	85,050	212	13	36	28					
University College of Medicine.—R	"	194	8	52	40					
University of Virginia Department of Medicine.—R	6,449	211	53	27	36					
WISCONSIN						47	309	2,069,042	2400	862
Milwaukee Medical College.—R	285,315	184	28	57	28					
Wisconsin College of Physicians and Surgeons.—R	"	125	19	51	32					

The following states and territories have no medical colleges: Arizona, population 122,931; Delaware, 184,735; Florida, 528,542; Idaho, 161,772; Indian Territory, 392,060; Mississippi, 1,551,270; Montana, 243,329; New Jersey, 1,883,669; New Mexico, 195,310; Nevada, 42,335; North Dakota, 319,146; Rhode Island, 428,556; South Dakota, 401,570; Utah, 276,749; Washington, 518,103; West Virginia, 958,800, and Wyoming, population, 92,531.

The accuracy of the statistics given of the enrolment and number of graduates of the colleges of the United States may be inferred from the fact that these were furnished by every college save one.

NAME OF COLLEGE.*	Alabama. 516	Arizona. 7	Arkansas. 506	California. 534	Colorado. 185	Connecticut. 283	Delaware. 59	Dist. of Col. 146	Florida. 98	Georgia. 448	Idaho. 19	Illinois. 2362	Indian Ter. 82	Indiana. 1203	Iowa. 798	Kansas. 567	Kentucky. 903	Louisiana. 428	Maine. 231	Maryland. 442
Coll. of Med., University of San Francisco, Cal.	...	1	...	57	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Birmingham Medical College	77	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	1	...	...
Medical College of Alabama	128	...	...	...	...	...	...	...	...	...	...	...	12	...	...	...	...	5	...	...
Medical Department Arkansas University	...	...	186	1	...	...	...	...	...	...	...	6	...	5	6	...	3	1	1	1
Coll. of Physicians and Surgeons, San Francisco	...	...	1	85	4	...	...	...	...	...	...	4	...	5	...	...	2	...	...	...
Cooper Medical College	...	...	...	172	...	...	...	...	...	...	1	2	...	...	1	1	...	...	...	...
Denver Homeopathic College	...	...	2	3	16	...	...	...	...	...	...	1	...	1	...	3	...	...	...	...
University of California, Medical Department	...	...	...	139	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Colorado School of Medicine	...	...	...	...	39	...	...	...	...	...	...	3	...	...	2	...	...	...	...	1
Denver and Gross College of Medicine	...	...	...	...	77	2	...	...	...	...	...	2	...	3	5	2	1	...	...	1
Yale University Medical Department	...	...	...	...	...	110	1	...	...	...	...	1	...	...	...	2	...	...	2	1
Howard University Medical Department	3	...	2	1	...	...	1	28	3	13	...	1	...	2	1	3	3	1	...	5
Medical Department Columbian University	1	...	2	...	...	1	...	49	...	3	1	10	...	5	3	2	5	3	6	17
University of Georgetown Medical Department	1	...	...	1	1	3	1	45	1	1	...	2	...	...	...	1	1	1	...	11
Atlanta College of Physicians and Surgeons	33	...	...	...	...	...	...	...	16	155	...	...	1	...	...	...	1	4	...	...
Medical College of Georgia	2	...	...	...	...	...	...	...	...	86	...	2	...	...	...	...	...	...	...	...
Georgia College of Eclectic Medicine and Surgery	2	...	7	...	...	...	...	...	3	29	...	1	...	...	1	...	...	9	...	...
American Medical Missionary College	...	...	...	6	1	...	...	...	1	...	...	5	...	...	10	1	1	...	...	...
Bennett College of Eclectic Medicine and Surgery	...	...	1	...	...	...	...	...	...	...	...	50	...	10	6	...	...	...	...	...
Chicago Homeopathic Medical College	...	...	...	1	1	...	...	...	...	...	...	60	...	13	14	3	2	...	...	1
College of Medicine and Surgery	...	...	...	2	...	...	...	...	...	...	...	25	...	...	...	...	...	...	...	...
Harvey Medical College	...	...	...	...	...	...	...	...	...	...	...	300	...	1	2	...	...	...	...	...
College of Physicians and Surgeons of Chicago	...	1	3	6	1	...	...	...	1	...	1	337	...	29	91	13	1	2	...	...
Dunham Medical College	...	...	...	...	3	...	1	...	...	...	...	41	...	6	4	1	...	...	...	...
Jenner Medical College	...	...	...	...	...	...	...	...	...	...	...	105	...	...	...	...	...	...	...	...
Hahnemann Medical College and Hospital	...	...	1	1	...	1	...	1	...	...	...	79	...	6	30	6	...	...	2	...
Hering Medical College	...	...	...	...	...	...	...	...	...	...	...	23	...	4	4	6	...	...	...	...
Illinois Medical College	1	...	...	2	1	...	...	...	...	1	3	67	...	52	4	3	2	3	...	...
Northwestern University Medical School	...	...	...	3	3	...	...	...	...	...	...	219	...	17	61	18	1	...	...	1
Rush Medical College	2	...	1	3	5	...	...	1	...	1	3	345	...	60	75	22	2	...	...	1
Central College of Phys. and Surgeons of Indiana	...	...	...	...	...	...	...	...	...	...	...	1	...	56	1	...	1	...	...	...
Eclectic Medical College of Indiana	...	...	...	1	...	...	...	...	...	...	...	...	...	22	...	1	...	...	...	...
Medical College of Indiana	...	...	1	...	1	...	...	...	...	...	...	12	...	287	1	1	1	...	...	...
Physio-Medical College of Indiana	...	...	...	1	...	...	...	...	...	...	...	3	...	11	1	...	...	...	...	4
Fort Wayne College of Medicine	...	...	...	...	...	...	...	...	...	...	...	...	...	34	1	...	2	...	...	...
Keokuk Medical College of Physicians and Surgs.	...	...	...	...	2	...	...	...	...	...	...	69	...	2	115	5	...	...	...	...
Iowa College of Physicians and Surgeons	...	...	...	...	...	...	...	...	...	...	...	...	...	...	61	1	...	...	...	...
Sioux City College of Medicine	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
State University of Iowa Homeo. Med. Dept.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
State University of Iowa Medical Department	...	...	...	1	...	...	...	...	...	...	...	11	...	...	125	...	...	...	...	...
Coll. of Physicians and Surgeons of Kansas City	...	...	2	...	...	...	...	...	...	...	...	1	...	...	...	51	...	...	...	...
Kansas Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	87	...	1	...	...
School of Medicine of University of Kansas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	37	...	...	...	...
Hospital College of Medicine	6	...	4	...	...	1	...	...	...	1	...	13	...	53	1	4	239	1	...	...
Louisville Medical College	8	...	6	1	1	...	...	...	2	2	...	3	...	22	...	7	70	8	...	...
Kentucky School of Medicine	3	...	4	...	1	...	...	...	2	2	...	7	3	66	...	1	95	...	...	1
S. W. Homeopathic Medical College	1	...	...	...	...	...	...	...	...	...	...	2	...	7	1	...	14	...	...	...
Medical Department University of Louisville	...	...	3	...	1	...	...	...	...	...	...	4	...	34	...	...	97	...	...	...
Kentucky University Medical Department	4	...	3	...	...	1	...	...	1	3	...	1	1	25	...	6	116	4	...	...
New Orleans University Medical Department	1	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	26	...	...
Tulane University Medical Department	24	...	11	...	...	...	...	...	8	2	...	...	1	2	...	...	1	199	...	...
Medical School of Maine at Bowdoin College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	79	...
Baltimore Medical College	1	...	...	...	...	18	3	...	...	4	...	5	...	3	...	...	1	...	49	52
Baltimore University School of Medicine	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	23
College of Physicians and Surgeons, Baltimore	4	...	...	1	1	13	2	...	1	4	...	...	...	1	1	...	1	...	5	42
Medical Department Johns Hopkins University	5	...	...	11	1	10	...	4	1	6	...	9	...	5	3	2	7	1	9	39
Southern Homeopathic Medical College	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	21
University of Maryland School of Medicine	...	...	...	...	...	...	2	...	7	18	...	...	...	...	...	...	...	...	1	151
Women's Medical College of Baltimore	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	11
Maryland Medical College	7	...	...	1	2	2	...	...	...	...	...	...	...	...	...	...	2	...	5	15
Boston University School of Medicine	1	...	...	1	...	3	...	...	...	...	...	1	...	...	...	...	...	6	...	...
College of Physicians and Surgeons	...	...	...	...	...	4	...	1	...	1	...	...	...	...	...	...	...	...	...	...
Harvard University Medical School	...	...	...	3	...	5	...	...	...	...	...	3	...	2	2	...	...	3	...	1
Tufts College Medical School	...	...	...	...	...	4	...	...	...	...	...	1	...	...	1	...	...	25	...	...
Detroit College of Medicine	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	...	...	...
Saginaw Valley Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...
University of Michigan Dept. of Med. and Surg.	1	...	...	4	1	2	...	...	1	3	...	35	...	199	12	3	2	...	...	...
Grand Rapids Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...
University of Michigan Homeo. Med. Coll	...	...	...	...	...	...	...	...	...	...	...	3	...	6	...	...	...	1	...	...
Michigan College of Medicine and Surgery	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	...	...	...	...	...
Detroit Homeopathic Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
College of Homeo. M. and S., Univ. of Minn	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Medical Department of Hamline University	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...
University of Minnesota College of M. and S.	...	...	...	1	...	...	...	...	...	...	...	...	...	...	14	...	...	1	...	...
Medico-Chirurgical College	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	22	...	...	...	...
Ensworth Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	7	...	...	...	...
Woman's Medical College	...	...	2	...	2	...	...	...	...	...	...	...	1	...	...	5	...	...	...	...
Central Medical College	...	...	...	...	...	...	...	...	...	...	1	...	2	...	4	10	...	...	...	...
Barnes Medical College	...	...	19	...	1	...	...	1	...	...	1	88	10	14	19	13	18	1	...	...
University Medical College of Kansas City	...	2	...	...	3	...	...	1	...	...	...	4	6	...	5	83	...	...	...	...
Kansas City Hahnemann Medical College	...	...	...	2	2	...	...	...	...	...	...	...	...	2	2	20	1	...	...	...
Marion-Sims-Beaumont College of Medicine	...	1	10	2	...	...	...	...	...	...	...	157	1	12	7	7	3	5	...	...
St. Louis College of Physicians and Surgeons	2	...	15	...	1	...	...	1	...	...	...	89	3	9	19	3	10	1	...	...
American Medical College	...	...	6	1	...	...	...	1	...	...	...	14	...	...	2	3	...	...	...	...
Kansas City Medical College	...	...	1	...	1	...	...	...	...	...	...	1	2	...	...	51	1	...	...	...
University of the State of Missouri	...	...	...	...	1	...	...	...	...	...	2	3	...	1	3	3	...	2	...	...
Medical Department Washington University	...	...	10	...	3	...	...	...	...	...	1	68	3	5	1	5	2	1	...	...
Eclectic Medical University	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	18	...	2	...	...
University of Nebraska College of Medicine	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
John A Creighton Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	26	3	...	...	...	...
Dartmouth Medical School	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Union University Albany Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...
Cornell University Medical College	3	...	...	...	...	6	...	...	...	1	...	1	...	2	4	...	...	1	1	...
Eclectic Medical College of New York	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
University of Buffalo Medical Department	1	...	...	...	...	1	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Long Island College Hospital	...	...	...	...	...	7	...	...	...	...	...	1	...	...	1	...	...	1	...	...
New York Homeopathic Medical Coll. and Hosp.	...	...	...	...	...	6	...	...	...	...	...	...	...	1	...	...	1	1	...	...
Syracuse University School of Medicine	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...

*The total number of students from each state is given at the top of each column.

Massachusetts. 1245	Michigan. 812	Minnesota. 582	Mississippi. 516	Missouri. 1332	Montana. 40	Nebraska. 235	New Hampshire. 120	New Jersey. 492	New Mexico. 7	New York. 2306	Nevada. 7	North Carolina. 399	North Dakota. 69	Ohio. 1194	Oklahoma. 67	Oregon. 124	Pennsylvania. 1826	Rhode Island. 121	South Carolina. 170	South Dakota. 67	Tennessee. 607	Texas. 997	Utah. 44	Vermont. 88	Virginia. 657	Washington. 73	West Virginia. 280	Wisconsin. 670	Wyoming. 12	Foreign. 494	Total.
...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	82
...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	136
...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	...	...	...	...	...	...	...	1	220
1	1	1	...	1	...	3	...	2	...	5	2	...	...	12	...	2	2	1	...	1	1	2	3	1	1	...	...	...	...	32	180
...	...	...	...	6	...	...	...	...	1	5	...	...	...	5	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	9	102
...	...	...	...	1	1	...	...	...	...	...	3	...	...	1	...	11	2	...	...	...	...	1	1	...	...	9	...	1	...	6	214
1	...	...	...	...	...	4	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	34
...	...	...	...	...	2	...	...	...	...	...	1	...	...	...	...	2	1	...	...	...	...	...	...	...	...	3	...	...	...	3	151
62	...	...	...	1	3	1	...	...	...	2	...	...	...	2	...	1	1	...	...	...	...	2	...	...	...	...	...	...	2	1	63
...	2	1	...	3	...	...	1	1	1	6	...	1	...	2	...	...	3	...	...	...	...	...	...	...	1	1	1	3	1	6	133
10	...	...	...	...	...	...	...	1	...	7	...	...	...	1	...	...	...	4	...	...	...	...	...	2	...	...	...	...	...	3	145
1	1	...	2	...	...	...	...	3	...	3	...	7	...	6	...	...	5	...	10	...	1	3	...	...	18	...	2	1	...	15	145
7	5	6	3	1	...	1	2	5	...	17	...	8	2	6	1	...	18	...	1	...	7	9	...	2	34	...	7	3	...	4	257
18	1	1	...	...	...	...	...	...	...	11	...	1	...	...	...	...	9	6	1	...	...	1	...	1	5	...	...	1	...	4	130
...	...	...	14	1	...	...	...	...	...	2	...	6	...	...	...	...	...	...	8	...	1	11	...	...	4	...	...	...	...	...	257
...	1	...	2	2	...	...	...	...	...	...	...	2	...	...	...	...	...	...	20	...	2	1	...	...	...	...	...	...	...	1	121
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	1	2	...	...	...	...	...	...	...	...	58
12	12	3	...	3	1	4	...	...	...	3	...	...	1	12	1	...	2	...	...	...	...	2	1	2	...	2	...	6	...	10	92
...	6	3	...	1	...	2	...	...	...	...	...	...	...	10	...	1	1	...	...	...	...	3	...	...	...	...	...	7	...	3	104
...	9	2	...	1	1	1	...	...	...	2	...	...	...	8	...	...	2	...	...	1	...	...	...	...	...	1	...	7	...	...	130
...	...	...	...	...	...	1	...	1	...	...	...	...	...	2	...	...	5	...	...	...	...	1	...	...	...	...	...	2	...	1	40
...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	307
1	25	26	2	9	...	6	...	...	...	2	...	...	3	25	...	5	5	...	1	7	1	3	2	...	1	2	...	68	...	12	692
1	2	...	...	2	...	...	...	...	...	7	...	...	...	4	...	...	4	...	...	...	...	1	...	...	...	...	...	2	...	3	82
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	105
1	8	3	...	4	1	4	1	3	...	3	...	...	...	6	...	...	4	...	...	1	...	...	2	1	...	1	...	13	...	2	185
...	6	6	...	2	...	4	...	...	...	2	...	...	...	2	...	...	3	...	...	2	...	...	...	...	...	...	...	3	...	5	72
1	4	5	5	6	...	1	...	1	...	4	...	1	1	13	...	...	12	1	1	1	1	15	2	...	...	2	4	8	...	...	228
1	12	11	1	4	3	17	...	...	...	5	...	...	1	4	1	...	3	1	...	10	...	2	...	1	...	6	...	53	1	6	465
4	14	26	...	16	3	19	1	...	...	4	...	...	3	22	...	3	8	...	...	7	...	3	9	1	1	6	1	121	2	8	803
...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	3	70
...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25
...	1	...	...	...	...	...	...	...	...	1	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	311
...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	...	...	...	...	1	...	2	...	...	...	...	1	...	...	1	31
...	...	...	1	...	...	...	...	...	...	...	...	...	...	7	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	46
1	...	9	...	25	...	2	...	...	...	...	...	...	1	2	...	...	3	...	...	4	...	1	...	...	...	...	...	4	...	2	247
...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	64
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	63
...	...	1	...	...	...	2	...	1	...	2	...	...	...	...	...	...	1	...	...	2	...	...	...	...	1	...	...	1	...	...	248
...	2	...	...	12	...	...	...	...	...	2	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	73
...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	99
...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	38
1	1	1	9	10	2	...	...	...	...	1	...	...	...	9	...	...	3	1	1	...	12	20	...	...	7	...	7	...	...	...	408
1	...	...	25	1	1	...	...	...	...	...	...	5	...	3	4	...	2	...	...	...	1	32	...	...	2	1	8	1	...	2	219
1	1	3	6	9	1	...	...	...	...	4	...	1	1	10	...	...	5	...	1	2	8	26	...	...	8	1	13	5	...	4	295
...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	27
...	...	...	2	3	...	...	...	...	...	5	...	1	...	5	...	...	1	...	...	...	4	12	...	...	...	...	7	...	...	1	180
...	1	...	10	13	1	1	...	...	...	2	...	4	...	1	1	...	1	...	2	...	6	10	...	...	3	...	14	...	...	3	238
...	...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	...	...	...	...	...	...	...	...	47
...	...	...	49	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	2	...	2	54	...	...	1	...	...	...	...	2	361
7	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	90
104	...	...	...	2	...	1	13	41	...	25	...	8	2	11	...	...	85	9	8	...	1	2	...	25	7	...	31	...	...	21	532
5	...	...	...	...	...	...	1	6	...	7	...	...	...	1	...	...	4	2	2	...	...	...	...	2	3	...	5	...	...	...	63
25	...	...	...	...	...	...	1	21	...	27	...	9	...	13	...	1	48	16	6	...	...	2	9	...	8	...	28	...	...	16	305
8	2	2	...	4	3	...	2	7	...	19	...	4	2	10	...	...	18	1	...	1	1	3	...	1	10	...	4	11	...	3	229
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	...	...	...	...	1	...	...	1	...	1	...	...	1	35
9	...	2	...	...	...	1	3	4	...	12	...	50	...	2	...	...	14	3	26	...	...	1	...	...	29	...	17	...	...	14	366
...	...	1	1	...	...	...	...	1	...	2	...	...	...	...	...	...	4	...	...	...	...	...	...	...	2	...	1	...	...	1	25
10	...	...	4	1	...	...	3	6	...	5	...	1	...	1	...	...	8	...	3	...	2	3	...	...	14	...	30	...	...	3	128
82	2	...	...	...	...	1	4	1	...	3	...	...	...	1	...	1	2	3	...	...	...	...	...	2	1	...	...	...	...	10	125
80	1	...	...	...	...	...	4	2	...	12	...	...	...	...	...	...	2	8	...	...	...	...	...	5	2	...	...	...	...	5	131
397	...	...	...	1	...	1	16	...	...	7	...	...	1	3	...	...	2	17	...	...	...	1	...	3	...	1	...	...	...	6	496
273	1	9	...	...	...	...	17	...	...	2	...	...	...	...	...	...	...	11	1	...	...	...	1	5	...	...	...	...	...	9	335
1	158	1	...	...	...	...	...	1	...	7	...	...	4	8	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	56	242
1	74	...	...	...	1	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	19	100
4	268	3	...	3	...	4	1	1	...	40	...	1	9	34	...	1	20	1	1	...	4	1	2	3	2	4	...	9	1	8	508
...	61	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	6	73
...	27	1	...	...	3	...	...	...	...	6	...	...	...	3	...	...	3	...	...	...	...	...	...	1	...	...	...	...	...	1	55
...	46	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15	75
...	27	...	...	...	...	...	...	...	...	2	...	...	...	8	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	5	45
...	...	18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	21
...	...	114	...	...	1	...	...	...	...	...	...	...	12	...	...	...	...	...	...	3	...	...	...	...	...	...	...	6	...	1	139
1	1	295	...	...	...	1	...	...	...	...	...	...	17	...	...	1	...	...	...	8	...	...	...	...	...	2	...	18	...	2	362
...	...	...	...	62	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	87
...	...	...	1	55	...	6	...	...	...	...	...	...	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	80
...	...	...	...	5	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16
...	...	...	...	53	1	5	...	...	...	1	...	...	...	4	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	82
1	2	4	3	233	...	1	...	...	3	2	...	...	1	7	8	...	2	...	1	2	4	27	2	...	2	...	6	1	...	4	501
...	...	...	...	99	...	5	...	...	...	1	...	...	...	3	5	...	1	...	...	...	...	2	...	...	1	...	1	...	1	2	225
...	...	...	...	29	...	2	...	...	...	2	...	1	...	1	4	...	...	...	...	3	...	...	...	...	...	...	...	1	...	...	72
1	...	2	8	224	1	3	...	...	...	...	...	...	3	1	3	1	3	...	1	1	1	13	3	...	...	4	...	3	1	6	488
...	...	...	...	90	1	1	...	...	...	4	...	1	...	8	5	1	2	...	...	...	2	8	...	...	1	...	1	1	...	1	280
...	...	...	...	33	...	1	...	...	...	...	...	...	...	...	1	1	1	...	...	1	1	3	...	...	...	...	...	...	...	...	69
...	...	2	...	35	1	2	...	...	...	...	...	...	...	1	6	...	...	...	...	...	...	...	...	...	...	6	...	...	...	1	111
1	...	...	1	56	1	1	...	...	...	3	...	...	...	1	2	...	5	...	...	1	...	...	...	...	...	...	...	2	...	1	90
1	...	...	...	130	...	1	...	...	...	...	...	...	1	3	1	...	...	...	...	...	...	3	...	...	1	1	...	1	...	...	242
...	...	...	...	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	49
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	153
...	...	3	...	...	...	114	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	151
19	...	1	...	...	...	...	32	...	...	3	...	...	...	1	...	...	1	2	...	...	...	...	...	9	...	...	...	...	...	...	72
7	...	...	...	...	...	...	...	1	...	141	...	...	...	...	...	...	2	...	...	...	...	...	...	3	...	...	...	...	...	...	154
8	1	...	...	1	...	...	...	28	...	344	...	...	...	...	...	1	4	3	...	...	...	...	1	...	1	...	...	...	...	4	415
...	...	...	...	...	...	...	...	9	...	89	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	100
...	...	1	...	...	...	...	...	1	...	216	...	...	...	...	...	...	9	...	...	...	...	...	...	...	...	...	...	1	...	7	239
3	...	...	...	...	...	...	2	10	...	210	...	2	...	...	...	...	...	1	...	...	...	...	...	3	...	...	...	...	...	4	245
4	...	...	...	...	1	...	...	20	...	67	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	...	...	2	106
1	...	...	...	...	...	...	1	...	...	118	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	2	128

NAME OF COLLEGE.	Alabama. 516	Arizona. 7	Arkansas. 506	California. 534	Colorado. 185	Connecticut. 283	Delaware. 59	Dist. of Col. 146	Florida. 98	Georgia. 448	Idaho. 19	Illinois. 2362	Indian Ter. 82	Indiana. 1203	Iowa. 798	Kansas. 567	Kentucky. 903	Louisiana. 428	Maine. 231	Maryland. 442
College of Physicians and Surgeons	4	...	2	3	2	34	1	1	3	8	...	3	...	4	2	...	5	...	4	...
New York Medical College and Hosp. for Women	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
University and Bellevue Hospital Medical College	1	...	...	...	...	9	...	...	2	6	...	2	...	1	3	...	2	...	...	2
Leonard Medical College	6	...	...	...	...	1	...	...	1	5	...	...	...	...	...	...	...	...	...	1
University of North Carolina Medical Department	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
North Carolina Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cleveland College of Physicians and Surgeons	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	1	1	...	...	...
Cleveland Homeopathic Medical College	...	...	...	...	...	2	...	...	...	...	...	...	...	...	1	1	...	...	...	...
Eclectic Medical Institute	...	...	1	1	...	...	...	1	1	1	...	13	...	20	1	...	14	...	...	...
Laura Memorial Woman's Medical College	...	...	...	1	...	...	...	...	...	...	...	...	...	3	...	1	3	...	...	...
Medical College of Ohio	1	...	...	...	...	...	...	...	...	...	...	1	...	13	...	1	26	...	...	...
Medical Department Western Reserve University	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Miami Medical College	...	...	...	...	...	...	...	...	1	...	...	3	...	8	1	...	13	...	...	...
Ohio Medical University	...	...	...	...	...	...	...	...	1	...	...	2	...	1	...	1	3	...	...	...
Pulte Medical College	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	4	...	...	3
Starling Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Toledo Medical College	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...
University of Oregon Medical Department	...	...	...	3	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Willamette University Medical Department	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Department of Medicine University of Penn	4	...	...	4	1	7	8	4	2	1	...	10	...	6	6	2	4	1	11	12
Hahnemann Medical College and Hospital	1	...	...	1	1	8	6	1	...	...	...	2	...	1	...	1	...	...	1	6
Jefferson Medical College	2	...	1	3	3	9	11	...	1	6	2	7	...	10	9	3	1	1	12	6
Western Pennsylvania Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Woman's Medical College of Pennsylvania	...	...	...	...	...	4	2	2	...	...	...	...	...	1	1	3	2	1	1	2
Medico-Chirurgical College of Philadelphia	1	...	...	2	...	3	11	...	1	...	...	...	...	1	2	...	6	...	1	2
Medical College of the State of South Carolina	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chattanooga National Medical College	7	...	...	...	...	...	...	...	...	9	...	...	...	1	...	...	...	...	...	...
Medical Department University of Tennessee	12	...	2	...	...	...	...	...	...	3	...	2	3	...	...	...	22	6	...	...
Chattanooga Medical College	47	1	10	...	1	...	...	1	6	24	...	4	1	1	1	...	4	6	1	...
Meharry Medical College	17	...	18	...	...	1	...	...	15	15	...	5	2	1	...	3	20	8	...	...
Memphis Hospital Medical College	19	1	133	...	...	...	...	...	...	3	...	1	14	2	...	3	1	68	...	...
Medical Department University of the South	20	...	8	...	...	...	1	...	3	14	...	...	...	1	2	...	4	28	...	...
Tennessee Medical College	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	11	...	...	...
University of Nashville Medical Department	24	...	17	...	...	...	...	...	2	4	...	...	2	5	...	...	20	22	...	...
Vanderbilt University Medical Department	16	...	6	1	...	...	...	...	1	2	...	1	...	3	...	...	14	2	...	...
Knoxville Medical College	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	2	...	...	...
Medical Department Ft. Worth University	...	...	...	...	...	...	...	...	...	...	1	...	3	...	...	...	...	...	...	...
Physio-Medical College of Texas	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Medical Department University of Texas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
University of Dallas Medical Department	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dallas Medical College	...	...	1	...	...	...	...	...	...	...	...	...	10	...	...	...	...	...	...	...
University of Vermont Medical Department	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
University College of Medicine	...	...	...	...	...	...	...	...	4	1	...	...	...	...	...	...	...	...	...	...
University of Virginia Medical Department	11	...	2	1	...	1	...	3	1	2	...	...	...	...	1	...	8	2	...	7
Medical College of Virginia	...	...	1	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...	...	1
Milwaukee Medical College	...	...	...	...	...	...	...	...	...	...	...	2	...	...	1	...	...	...	...	...
Wisconsin College of Physicians and Surgeons	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...

affiliation with any university. The distinction between university and college in Canada is definite, namely, the latter is a teaching body only and has no right to grant a degree. Most of these colleges are mentioned below.

Toronto, Ontario.

UNIVERSITY OF TORONTO, MEDICAL FACULTY.—All the lectures and demonstrations are given in the laboratories and lecture rooms of the University; more than two-thirds of the instruction in the 3d and 4th years are given in the wards and in the pathological and clinical laboratories. A 5th year is now demanded by the Ontario Medical Council, for which provision will be made. Clinical instruction is given in the Toronto General Hospital, Mercer Eye and Ear infirmary, Burnside Lying-in Hospital, Hospital for Sick Children, and St. Michael's Hospital. Before commencing students must satisfy, as to qualifications, the College of Physicians and Surgeons of Ontario (Provincial Board). Fees are: Registration (payable once), $5; each of the first four years, $100; fifth year, $50; for the degree of M.B., and M.D., each $20. Number of students registered last session, 405; graduates, 48. The sixteenth session, since the re-establishment of the Medical Faculty of the University, will commence October 1.

TRINITY MEDICAL COLLEGE.—This college is in affiliation with Trinity University, the University of Toronto, Queen's University, and the University of Manitoba. It is situated in Toronto. Toronto General Hospital, Hospital for Sick Children, St. Michael's Hospital, Burnside Lying-in Hospital, and the Eye and Ear Hospital are open to the students for clinical instruction. The entering candidate must pass the examination required by the Provincial College of Physicians and Surgeons. The fee for each session of eight months is $100, exclusive of fees for examinations and hospitals. Matriculates during last session were 147; graduates, 29. The thirty-second "consecutive winter session" will begin September 25, and continue for eight months.

ONTARIO MEDICAL COLLEGE FOR WOMEN.—This college is located Toronto, and is not empowered to grant degrees in Medicine, but it qualifies students fully to take the examinations in any university. The college requires no certificate of matriculation examination, but will accept that of the university selected by the student. The fee for each year is $100, exclusive of all hospital and university fees. The number of undergraduates, 1901-2, was 339; graduates, 52. The nineteenth session will open September 16 and continue for eight months.

London, Ontario.

MEDICAL DEPARTMENT OF THE WESTERN UNIVERSITY.—This college makes use of Victoria Hospital for its clinical work. The fee each year is $90, and $25 for graduation. The requirements for matriculation are those demanded by the College of Physicians and Surgeons of Ontario, and the full course is one of five years. The matriculates of last session were 84; graduates, 15. The twenty-first session opens Sept. 9, 1902, and ends May 7, 1903.

Montreal, Quebec.

UNIVERSITY OF BISHOP'S COLLEGE, FACULTY OF MEDICINE.—The course leading to the degree of C.M., M.D., extends over four years of nine months each. The annual fees are $100, which include all practical classes and material for the same. Students must, on entering the study of medicine, pass the college matriculation examination, or if the license for the Province of Quebec is desired, that of the College of Physicians and Surgeons of that province. Special facilities are offered for the practical teaching of obstetrics, and undergraduates are obliged to take entire charge of several accouchements before being allowed to take the final examination. Other clinical facilities are offered in the Montreal General Hospital, the Royal Victoria Hospital, the Western Hospital, the Hotel Dieu, and the Women's Hospital. During the last session the students numbered 76; graduates, 7. The session for 1902-3 will open October 1.

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—This college has a course of four years of nine months each. The total fees for the course are $500. Clinical instruction is given in the Montreal General Hospital, Royal Victoria Hospital, and Montreal Maternity Hospital. Students, except university graduates in arts, must pass the preliminary examination equivalent to that required by the Provincial College of Physicians and Surgeons. Last year's matriculates numbered 473; graduates, 96. The seventy-first session will commence September 23.

Quebec, P. Q.

UNIVERSITE LAVAL, FACULTE DE MEDECINE.—The course consists of four years. The fees for the entire course are $220 and $300, according to preliminary qualifications. The matriculates during last session were 97; graduates, 19.

Halifax, Nova Scotia.

FACULTY OF MEDICINE OF DALHOUSE UNIVERSITY.—The course consists of four years of eight months each, and leads to the final M.D. and C.M. examination. Prospective students must pass the preliminary examination of the Provincial Medical Board, a university examination or a recognized equivalent. During last session there were 88 students, of which 21 belonged to the graduating class.

NOTES.

In the Table indicating homes of students, those marked foreign include Canadians. This will explain the number in the "foreign" column, in certain colleges located near the

Massachusetts. 1245	Michigan. 812	Minnesota. 582	Mississippi. 516	Missouri. 1332	Montana. 40	Nebraska. 235	New Hampshire. 120	New Jersey. 492	New Mexico. 7	New York. 2306	Nevada. 7	North Carolina. 399	North Dakota. 69	Ohio. 1194	Oklahoma. 67	Oregon. 124	Pennsylvania. 1826	Rhode Island. 121	South Carolina. 170	South Dakota. 67	Tennessee 607	Texas. 997	Utah. 44	Vermont. 88	Virginia. 657	Washington. 73	West Virginia. 280	Wisconsin. 670	Wyoming. 12	Foreign. 494	Total.
32	3	...	...	2	2	1	2	108	...	476	1	4	...	11	...	1	13	13	1	...	1	5	...	5	2	...	1	4	1	13	778
...	...	...	...	...	...	...	...	5	...	23	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	32
13	...	...	1	...	...	...	4	42	...	191	...	2	...	8	...	1	9	4	1	...	...	2	4	2	1	1	...	...	...	6	319
...	...	...	1	...	...	...	...	2	...	3	...	28	...	...	...	...	6	1	15	...	...	1	...	...	28	...	1	...	...	4	106
1	...	...	1	...	...	...	...	...	...	...	...	58	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	62
...	...	...	...	...	...	...	...	...	...	...	...	50	...	...	...	...	...	...	3	...	...	...	...	...	1	...	...	...	...	...	55
...	...	...	...	...	...	...	...	...	...	3	...	...	...	68	...	...	9	...	...	...	...	...	...	...	...	...	...	...	...	2	86
...	2	...	...	...	...	...	...	...	...	12	...	...	...	65	...	...	25	1	...	...	...	...	...	...	...	...	1	...	...	2	112
...	1	...	...	3	...	1	...	...	...	4	...	...	...	53	1	...	14	...	...	...	...	2	...	...	...	...	10	...	...	...	142
...	...	...	...	...	...	...	...	...	...	1	...	...	...	14	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	1	26
...	...	...	...	...	...	...	...	...	...	...	...	...	...	133	1	...	...	...	...	...	...	...	...	...	1	...	1	...	...	2	180
1	1	...	...	...	...	...	...	1	...	1	...	...	...	111	...	...	6	...	...	...	...	...	...	...	...	...	...	1	...	2	126
...	...	...	...	...	...	...	...	...	...	...	...	...	...	69	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	97
1	3	...	...	...	...	...	...	...	...	5	...	...	...	187	...	...	21	...	...	...	...	...	...	...	...	...	4	...	...	3	232
1	...	...	...	...	...	...	...	...	...	2	...	...	...	25	...	...	1	...	...	...	...	...	...	...	...	...	2	...	...	...	40
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	2	...	...	...	...	...	...	...	...	...	...	...	...	46	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	52
...	1	...	...	...	...	...	...	...	...	2	...	...	1	...	...	59	...	...	...	...	...	...	...	...	...	9	...	...	...	4	80
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	27
10	1	1	1	4	...	1	2	23	...	19	...	5	...	20	...	2	324	5	2	...	4	3	...	1	4	4	6	5	...	12	542
3	...	3	...	...	...	1	...	40	...	12	...	...	...	5	...	...	168	...	1	...	...	...	...	1	1	...	1	1	...	3	269
32	3	3	2	1	1	4	3	56	...	25	...	6	...	23	...	1	436	6	1	...	...	5	2	1	2	...	12	2	1	9	724
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	327
16	...	...	2	2	...	...	2	10	...	14	...	1	...	1	...	...	74	...	1	...	...	...	...	2	...	...	1	...	...	12	157
5	...	1	...	...	2	1	...	22	...	11	...	1	1	7	...	...	340	...	2	...	...	1	1	2	1	1	1	...	...	17	447
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	89
...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	6	...	...	...	1	...	...	...	...	...	26
...	...	...	12	1	...	...	...	1	...	...	...	5	...	1	1	...	...	...	1	...	66	21	...	...	2	...	...	...	...	1	162
...	...	...	13	...	...	1	...	...	1	1	...	36	1	2	...	...	1	...	3	...	63	14	...	...	2	...	4	...	1	1	252
...	1	...	24	11	...	...	...	...	...	1	...	1	...	2	1	...	1	...	9	...	50	19	...	...	1	...	1	...	...	6	233
...	...	...	205	11	...	...	...	...	...	...	...	1	...	...	2	...	...	...	2	...	82	138	...	...	...	...	1	...	...	...	687
4	...	1	27	2	...	...	1	...	...	7	...	8	...	...	...	...	4	...	13	...	37	20	...	1	16	1	2	...	...	2	227
...	...	...	...	1	...	...	...	...	...	...	...	10	...	...	...	...	...	...	1	...	53	1	...	...	1	...	...	...	...	...	79
...	2	...	36	2	...	...	...	...	...	...	...	3	...	1	...	...	...	...	5	1	80	26	...	...	...	1	4	...	...	...	257
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border. Some colleges were unable or failed to enumerate students by states. These do not appear in this table.

There are a number of medical schools not given here because they do not grant degrees. Many of them conduct only the first two years of the medical course.

In the Canadian schools given on page 572 no detailed mention was made of the following colleges, from which catalogs or other data were not received: Faculty of Medicine, Queen's University, Kingston, Ont.; Manitoba Medical College, affiliated with the University of Manitoba (the course of the latter is four years of eight months each); Ecole de Medecine et du Chirurgie. (This college is the Montreal branch of the Medical Faculty of the Universite-Laval in Quebec. It is a French school and was incorporated in 1845. Its students in all classes now number from 280 to 300 each year); and Halifax Medical College. The last mentioned college supplies no "preliminary examiners"; students are referred for examination to the Registrar of the Provincial Medical Board. The course consists of four years of eight months each. The fees for the full course are $300, and $30 for graduation.

The changes in colleges this year are the consolidation of Denver College of Medicine and Gross Medical College, the suspension of Northwestern University Woman's Medical College, Chicago, and Cincinnati College of Medicine and Surgery and the establishment of Oakland College of Medicine and Surgery, Oklahoma City Medical College, Department of Medicine of Temple College, Philadelphia, and the Physio-Medical College of Texas. Some minor schools, which hardly could be said to exist before, have gone out of existence.

The only three-year medical school remaining is the North Carolina Medical College. The restriction of the state boards of registration are leaving few states available for practice to the graduates of this school. Sewanee Medical College, Tenn., was a three-year school but begins a four-year system this year.

A Note on Teaching the History of Medicine.—William Osler observes, in the *British Medical Journal*, that in the everyday work of the wards, and of the out-patient department, the student may be helped to get into the habit of looking at a subject from the historical standpoint. In his out-patient class this is made a special feature of the teaching. A case of exophthalmic goiter comes in—the question at once is put: Who was Graves? Who was Parry? Who was Basedow? Of course the student does not know; he is told to bring, on another day, the original article, and he is given five to ten minutes in which to read a brief historical note. Osler takes from the class-book at random the titles of some subjects which have been presented this session, very often to the edification of the teachers as much as the students: Sydenham's description of chorea, Valsalva's method of treating aneurism, Tufnell's method of treating aneurism, the history of our knowledge of lead poisoning, Abram Colles and his law, Dr. King's safety valve action of the tricuspid valve, Bright's original description of the disease which bears his name, Glisson's original description of rickets, Blaud and his pill, the history of hemophilia in America, the history of diabetes. Once a week he meets his clinical clerks in an informal conference on the events of the week. For half an hour he gives a short talk on one of the "Masters of Medicine," in which, as far as possible, the original editions of the works are shown. In the present crowded state of the curriculum it does not seem desirable to add the "History of Medicine" as a compulsory subject. An attractive course will catch the good men and do them good, but much more valuable is it to train insensibly the mind of the student into the habit of looking at things from the historical standpoint, which can be done by individual teachers.—From the *St. Louis Med. Review.*

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SATURDAY, SEPTEMBER 6, 1902.

THE MEDICAL COLLEGE STATISTICS FOR 1902.

One hundred and fifty-six medical colleges, with 6,776 instructors, enrolled 27,501 students and graduated 5,002 students in the school year 1901-2. In the year previous, 1900-1, 156 colleges, with 5,958 teachers, enrolled 26,417 students and graduated 5,444. Twenty years ago there were 89 medical schools with 14,934 students and 4,115 graduates. The increase in the number of schools and students is far in advance of the increase in the number of graduates. The graduates twenty years ago were 4,115; in 1900, 5,314; in 1901, 5,444, and in 1902, 5,000. The attendance in twenty years has therefore increased nearly 200 per cent. and the number of graduates has increased less than 25 per cent. The decrease in the number of graduates in the last year is assigned to the increased length of course of study and increased requirements by state boards. It is considered by many a temporary decrease and one that will be changed to an increase as soon as the temporary check is overcome. The decrease in graduates is classified thus: There were 4,879 graduates from the regular colleges in 1901; 387 from the homeopathic; 148 from the eclectic, and 30 from the physio-medical and nondescript; total, 5,444. In 1902, 4,498 graduated from regular schools; 336 from the homeopathic; 138 from the eclectic, and 27 from the others; a decrease in every class. The increase in students is classified thus: There were 23,846 students registered at the regular colleges during the year ending July 1, 1901; 1,683 at the homeopathic; 664 at the eclectic, and 224 at the physio-medical and nondescript; a total of 26,417. During the year ending July 1, 1902, 24,878 students registered at the regular colleges; 1,617 at the homeopathic; 765 at the eclectic, and 241 at the physio-medical and nondescript; total, 27,501. This is an increase among all but the homeopathic schools. In the year the regular schools increased in enrolment 1,032 and decreased in number of graduates 381. The homeopaths lost in enrolment 66 and in graduates 51; the eclectics gained in enrolment 99 and lost 10 in graduates; all other schools gained 17 in enrolment and lost 3 in graduates.

THE MODERN UNIVERSITY MEDICAL SCHOOL.

In another part of this issue will be found a most excellent, thoughtful and practical paper on the modern university, with special reference to the part the medical department should play in the university as a whole and in its relations to the other special departments. Whatever the ideal university may be, and there is room for some difference of opinion in regard to this, the author of the paper has fairly stated his ideas on the status of the medical school in the university and the function of the university body as a whole in its relations to the medical department. We wish to speak, however, about two features: the author's views in regard to the facilities for medical education and the innovation of the continuous course.

THE JOURNAL has long maintained that it is quality and not quantity that is demanded in the American medical profession, and that our systems of medical education have heretofore worked directly against this desideratum. We have multiplied medical colleges, reduced expenses and in every way sought to facilitate entrance into the profession. If the university medical school is to continue this policy it seems to us that its real usefulness to the profession and the public will be to that extent reduced. Nevertheless, this seems to be in a measure one of the ideas advanced by the author of the paper. He offers his ideal of requirements that should be demanded for admission, a high-school course and two years of college, and while admitting the advantages of a full collegiate course, holds that it would be unfortunate if all the high grade medical schools should adopt such a requirement.

None of us ever exceed our ideals in practice, unless, indeed, they are so low that circumstances force us to do so, and such a condition of affairs is not to be here considered. If we lower our ideals we lower conduct still more, and this is as true as regards medical education as anything else. The author admits that provisions must be made for exceptions in which his standard is not to be required, and it will be very easy in practice to make such exceptions prove to be the rule. There would be every temptation to such a course. If a man has a real vocation to medicine and the needed virile energy, he will get his medical education if he has to get a college degree first. It should not, in our opinion, be the aim in medical education to in any way lower the standard or to render the entrance into the profession less difficult than is demanded by a course that will be equal to that given in any part of the world. Let the high-school course and the two years of college be the minimum and not the ideal requirement for admission.

We wish, however, to protest against another view advanced. The author speaks of the continuous course as beyond question one of the features of the future university school of medicine, which may be true, but the arguments advanced for it do not strike us favorably. It may be more profitable to keep open house for medical aspirants all the year round, but this is not the highest sort of argument for the course. In several of the state medical practice laws it is particularly specified that the three or four medical courses must be in separate years, and similar provisions are included in other states in the regulations which the registration boards are authorized

to make. This has been rendered necessary, or at least so considered, in the past, and very likely will be still so considered in the future. We do not therefore fully appreciate the force of the plea for the continuous course that it should be adopted because it will enable the ambitious, progressive student to shorten the period between his matriculation and graduation, or that this ought to be made possible. The specially able student ought, in a university, to be able to profitably spend four years' study time, even if he has to exceed the minimum requirements of a pass examination by so doing, and we believe it will be more profitable for him and beneficial to the profession generally to make it compulsory so to do. The continuous course should not mean in any sense a short cut into the medical profession. Neither do we think that it is so intended by the author.

There is very much in Dr. Dodson's article that we can cordially approve, and its very excellence as a whole makes it appear the more necessary to call attention to this point. In the past, American medicine has suffered before the world because, while its focal brightnesses have been conspicuous, its average illumination has been considered low. We should therefore in the work, in which we all are so earnestly concerned, of elevating its standing, be most jealously critical of any and every tendency, however recondite or insignificant it may appear, that may defeat our object.

THE EXTRAMURAL CLINIC.

The problem of providing a sufficient amount of clinical material for the adequate instruction of students is coming to be a serious one. The exhibition of patients, medical or surgical, in an arena clinic, before large classes, can no longer be deemed an adequate means of training as a preparation for practical life. It would perhaps have been better if the term "clinic" had never been applied to such an exercise. As ordinarily conducted it might be more properly termed an illustrated didactic lecture. The word clinic, signifying as it does, etymologically, the bedside, ought to indicate an exercise in which the students singly, or in small groups, are brought actually to the bedside of the patient so that each individual is allowed to examine by sight, hearing and touch the phenomena presented. Only by such methods can the eye, the ear, the tactile and other senses be properly educated. The provision of cases in sufficient numbers to teach in this way large classes of students, means a very large number of hospital beds and dispensary patients. We know of no medical school which possesses these facilities to anything like the degree necessary. The maintenance of hospitals, under the absolute control of the college, is enormously expensive—far and away the most costly item in the conduct of the institution. On the other hand, there are, in every large city, many hospitals to which the admission of students, under suitable restrictions, would inevitably result in the more thorough and careful examination of the patients and the stimulation of the attending staff to better work. It is a trite but true observation that only the very rich and the very poor receive the best medical attention—the rich because they are able to pay well for it, and the poor because they are largely to be found in teaching hospitals under the care of the most able and painstaking diagnosticians—the medical teachers.

Here, then, are physicians on the staff of unattached hospitals who are willing and anxious to teach, students greatly in need of clinical material and instruction and patients who will be benefited in every way by being made the subjects of such examination and demonstration. How can these several groups be mutually helpful to each other? The extramural clinic, so long in vogue in Edinburgh and other foreign schools, seems to offer a solution, and is being utilized in some of our American colleges. Clinics are offered at these outlying hospitals by members of the staff, to which the students of a neighboring school or schools are admitted, the physicians giving such courses becoming extramural members of the faculty of the college. Certain provisions are necessary to the perfect success of the plan. The elective system greatly facilitates its successful operation, for such work must be made elective on the course for the degree, credit being allowed in proportion to the amount and character of the work. The exercises in each hospital and for each group of students must be so arranged that there is the least possible loss of time in going back and forth. This is best accomplished by arranging for exercises at one place to occupy a half day. When so arranged experience has shown that students will cheerfully go several miles to attend them. The classes must be small, seldom exceeding eight or ten, for the chief inducement to the student is the opportunity afforded him to come into immediate contact with the patients. The teachers must be carefully selected with regard to their ability and faithfulness; never should an extramural appointment be made simply because the appointee commands a large amount of material.

Great care must be exercised in the careful handling and the courteous treatment of the patients, and when this is done they not only do not resent, but eagerly welcome the opportunity to be presented to the class. There are few exceptions to this rule. It is rarely necessary or best, for either patients or students, that the latter be taken into the large wards of a hospital. All of the advantages of "walking the wards" with the clinician may be much better secured by having patients brought to an examining room—one, two or three at a time—to be studied there, away from the noise and distractions of the large ward.

Numerous hospitals aggregating thousands of beds are within easy access of the medical schools. Only the persistent, tactful education of the public, and especially of the managing boards, is necessary to open their doors for clinical instruction, which, with proper manage-

ment, must inevitably result in the benefit of all concerned. It is safe to predict a large field of usefulness for the extramural clinic.

MEDICAL HISTORY.

Over a year ago[1] we directed attention to the need of more general study of the historical side of medicine. In view of the importance of the subject and the almost universal interest being awakened in it at present, it will not be amiss to refer to it again, and to mention some recent additions to medical history in America. In "The Relation of Yale to Medicine," delivered at the two hundredth anniversary of the founding of the college,[2] Prof. Wm. H. Welch of Baltimore has added another article to the list of those relating to American medical history. In this paper he writes in his usual interesting manner about the founding of Yale Medical Department and the men who have been active in advancing its interests. He emphasizes the value of a good practical knowledge of chemistry, physics and general biology in the preliminary training of prospective medical students, and gives to Yale the credit of first clearly recognizing and supplying this want in the Sheffield Scientific School.

The history of American medicine has received many valuable contributions through the activities of the Johns Hopkins Historical Club. These have been published in the *Johns Hopkins Hospital Bulletin* and have served to familiarize American physicians with the work of men concerning whom they had previously known but little. A recent article by J. G. Mumford[3] has added a biographical sketch of Dr. Jacob Bigelow, which is worthy of a place among the previous ones. Mumford says that the Massachusetts Institute of Technology, with its splendid curriculum, its strong staff and its host of highly trained and successful graduates, stands to-day a monument, in part at least, to the energies of Jacob Bigelow. In an article on "The Work of Jenner and His Most Faithful Disciple, Waterhouse," Wm. M. Welch of Philadelphia has introduced, for the first time to a large part of the profession, the man through whose efforts vaccination was introduced into almost every city and town in the country. I. N. Danforth[4] furnished our readers a valuable, although necessarily incomplete history of Samuel Fuller, "the earliest practitioner of medicine in Massachusetts."

These recent writings on the history of American medicine and medical men are an indication of the interest being taken in the history of the medical affairs of our own country, and should serve to stimulate similar efforts by others who are in positions to contribute anything of value and interest.

Instruction in medical history should be given in every medical school. Provision for this has been made in several, but it is far from general. Such instruction by a well-informed lecturer could certainly be made very popular among students, and would have the effect of enlarging the interests and elevating the ideas of many students regarding their chosen profession.

In the Italian universities, medical history seems to have occupied a better position than elsewhere, regular lectures upon this subject being given in most of the Italian schools. The editor of the *British Medical Journal*[5] made the statement that there was no professor of medical history in England, Germany or Holland. In a later issue[6] it appears that lectures on this subject are given in the universities of Vienna, Berlin and Würzburg. Formerly such lectures were provided by many of the German universities, but for some reason they have been largely discontinued. E. Braatz[7] urges the German universities to resume instruction in medical history. The agitation of the subject in England and Germany may be expected to lead to more general interest, and with it medical history will take its proper place in the medical course.

In America our own medical history is receiving the attention of some of our most talented men, and it is to be hoped that every medical school will soon have a professor of medical history who shall be sufficiently remunerated for his work so that he may be a man with special ability and preparation for the place.

DISINFECTION OF THE URINE IN TYPHOID FEVER.

If a physician were to neglect disinfection by some simple, recognized method of the stools in typhoid fever, he would be held blamable, and justly so. If he were to omit cautioning the consumptive in regard to the dangerously infectious character of the sputum, he would be regarded as careless and negligent. Again, if the physician were to permit his scarlet fever patients to run about in the neighborhood before desquamation is completed, it would spread consternation through the community and the general condemnation of such action would not be slow in making itself effectively heard.

Numerous other instances could be mentioned of equally glaring sins of omission and commission in the preventive treatment of infectious diseases against which the general professional conscience would protest. How is it in the case of the urine in typhoid fever? It is demonstrated beyond doubt that in a considerable percentage of the patients suffering with typhoid fever, typhoid bacilli occur in the urine in large quantities, frequently so numerously that the urine is rendered turbid on that account alone. It is furthermore known that typhoid bacilli may persist in the urine for months and even years after an attack of typhoid fever, such persons being in reality perambulating disseminators of bacilli, which are deposited wherever urine falls. In this way, unless precautions are taken, the cause of typhoid fever may be perpetuated locally and new foci of disease started as the bacillophorous urine finds its

1. THE JOURNAL A. M. A., Aug. 17, 1901, 453.
2. Medical News, June 21, 1902, 1165.
3. Johns Hopkins Hospital Bulletin, January, 1902.
4. THE JOURNAL A. M. A., Nov. 16, 1901.
5. British Medical Journal, March 15, 1902.
6. Idem., May 31, 1902.
7. Deut. Med. Woch., Jan. 24, 1901.

way into the sources of water supply. With the springing up of brisk endemics of typhoid here and there the question arises, are physicians using proper precautions in regard to the urine of their typhoid patients? Has the proper care of the urine become a matter of definite routine as is the case with the stools? Probably much more ought to be done than is being done. Certainly a convalescent typhoid patient should not be allowed to leave the hospital or be discharged from supervision before the condition of the urine as to the absence or presence of typhoid bacilli has been established. This would require a bacteriological examination of the urine, at least in many cases, and this the vast majority of private practitioners are unable to do as thoroughly as modern sanitary ideas require. In the case of hospitals, however, such examination ought to be a matter of routine. We are in need of further reports concerning the presence and persistence of typhoid bacilli in urine after attacks of typhoid fever. Careful observations should be made with the view to the establishment of easily practicable methods by means of which the practitioner can determine for himself the condition of the urine of his typhoid patients. In the meantime, it is our plain duty to do all in our power to prevent the spread of typhoid fever by the urine. Much may be done by the systematic use of reliable urinary disinfectants, such as urotropin, which should be administered for a reasonable time to every typhoid convalescent. Patients should be informed of the fact that their urine may be dangerous. No doubt some of them would feel the responsibility thus placed on them and exercise a certain degree of care.

This is another striking example of the direct and real value of bacteriological laboratory methods applied to practical medicine. As the matter now stands it is quite clear that practitioners of medicine, in order to do their full duty in this matter of typhoid fever, must possess or control sufficient bacteriologic skill and apparatus to determine whether or not the urine of their typhoid patients is free from typhoid bacilli before returning to their usual modes of life.

A TESTIMONY.

The *Hahnemannian Advocate*, a publication whose name indicates its character and aims, is disturbed by the statistics of medical education given in our last year's educational number. It says editorially:

We have not the space to show the summaries from which the *per cent. of gain* made by the dominant school for the past ten years may be drawn, but the fact remains and must be faced. A study of these summaries reveals the fact that:

1. There are only five allopathic to one homeopathic college, although their alumni are more than ten to one.

2. Their teaching force outnumbers our own, because their laboratories are more extensive and better equipped.

3. Their average attendance is about one hundred and ninety, while we have only seventy-five.

4. The similarity in the course of study during the first two years naturally leads the student to select that institution offering the most comprehensive laboratory facilities

5. The similarity in the course of instruction during the last two years naturally leads the student to stay where he is.

We believe these five conclusions tell the whole story. There are too many homeopathic colleges for the present support, hence they are compelled to draw on private resources for the necessary means to carry on their work. Their laboratories are incomplete and clinical facilities inadequate. Only such students are drawn to their classes as have been impressed with superiority of homeopathic principles before they become medical students.

We do not often quote this contemporary, but the above testimony is perhaps of some interest on account of its source.

THE RETIREMENT OF GOVERNOR GAGE.

The country is to be congratulated on the failure of Governor Gage of California to receive a renomination by his party. His course in regard to the existence of plague in San Francisco, the ostrich policy he adopted and the measures he seems to have advocated for the suppression of the facts should each and all condemn him to retirement from public life at the present time. We do not know at this distance and at the present time what were all the factors in the contest, but may allow ourselves to legitimately infer that Governor Gage has not won all the popularity he anticipated from his zeal in suppressing facts that seemed to him against the commercial interests of the city of San Francisco. The fact, also, that the successful nominee, Dr. Geo. C. Pardee, is a physician is perhaps significant. So far as we have yet heard there is nothing in his record that would indicate that he would put himself in opposition to his profession and continue a policy that is full of danger not only to the state of California but of all regions in connection with it. Plague, properly managed, does not in these modern times seem to be such a general peril in civilized countries as in times past. If, however, its existence is wilfully ignored or due precautions are not employed, there is no telling when an outbreak of the disease may not occur, rivaling in severity those of the past. The existence of an Oriental population in California, herding by itself under the most unsanitary conditions in its cities and concealing rather than reporting infectious disease, renders the existence of such an infection as bubonic plague among them a very serious problem, demanding the most earnest attention on the part of all who have to do with the administration of state affairs. Whatever Governor Gage's merits may have been in other respects, he was wilfully and culpably lacking in his duty in this particular regard. This is not an unimportant matter; it is the one question of all others that has arisen in his administration, that concerns not only California but all the rest of the country. Any change would therefore be welcome as an end of what has been, and the nomination of a medical man in sympathy, as we trust, with the best element of his profession, is the strongest possible rebuke to the ostrich policy of the past.

PATENT INSIDES FOR MEDICAL JOURNALS.

Medical journals with "patent insides," like the daily papers that are published in country towns, are almost in sight. Two concerns in an eastern city announce that they are going to syndicate a group of medical journals which will pretty well cover the United States. They propose to employ medical writers who will contribute to the papers controlled by the syndicate. The matter

thus produced is to be made into plates at headquarters and furnished to each of the journals once a month. They announce that they have employed translators and abstractors, and that they will occupy with their matter some twenty-four pages in each issue of each of the journals entering into the arrangement. There is to be no charge for this service, except that the syndicate managers are to have absolute control, without cost to them, of a certain number of advertising pages in each of the journals. Up to the present time the promoters of these schemes are not asking the journals to pay them in this way much over three times what their service would be worth when rated at the highest notch. The scheme is a bad one, because it will tend to stereotype medical literature and to crush original work in medicine, that is, in case it were generally adopted, which, of course, is not at all likely. Very few journals will agree to such a one-sided arrangement, and those that do will necessarily be marked by the profession as being almost moribund. But the most objectionable feature of the proposition lies in the fact that any journal accepting it thereby places a certain amount of its space for original matter and a certain number of its advertising pages under the control of laymen who have no interest in maintaining ethical standards, but whose chief aim will be to make money out of the scheme, even if in doing so they send out as original articles papers which are written chiefly for the purpose of benefiting some advertiser. The medical profession can certainly not be expected to take a kindly view of such a proposal, and it does not seem possible that success will come to it. It is certain that hereafter readers of medical journals will examine them critically in order to discover which ones may have been deluded.

Medical News.

Owing to the space taken by the educational matter in this issue, all regular departments are greatly reduced and some are omitted.

CALIFORNIA.

Maternity Ward.—Through the generosity of Mrs. Robert J. Burdette, the building of a maternity ward for the Pasadena Hospital is assured.

More Plague in San Francisco.—During August, 2 new cases of bubonic plague were reported in San Francisco, making a total for 1902 up to this date of 13, with 12 deaths.

Riverside Hospital Incorporated.—Articles of incorporation of the Riverside Hospital Association were filed, August 20. The company is capitalized at $25,000, of which $6275 has been subscribed.

Dr. Lane's Estate.—The value of the estate of the late Dr. Levi Cooper Lane, San Francisco, has been appraised at $301,108.56. His widow, who died August 9, has left the bulk of the estate to Cooper Medical College.

Lane Medical Lectures.—The seventh annual course of Lane medical lectures was held this week. The lecturer was Charles B. Ball, M.Ch. Ireland, F.R.C.S. England, and regius professor of surgery in the University of Dublin.

CONNECTICUT.

Personal.—Dr. Brownlee R. Ward, U. S. Navy, has resigned and will devote his attention to private practice in New Haven.

Cancer Doctor Restrained.—In the case of A. Stanley Maine of Hampton, charged with practicing medicine without a license, the defendant was bound over to the Superior Court under $200 bonds, Maine agreeing to suspend practice until the Superior Court renders its decision.

Deaths in the State.—During July, 1394 deaths occurred, 333 more than in June, 97 more than in July, 1901, and 55 above the average of July for the five preceding years. The annual death-rate per 1000 for the larger towns was 19.9, for the smaller towns, 14.5, and for the whole state, 18.5. The deaths from infectious diseases number 527, or 37.7 per cent. of the total mortality.

The Hubbard Deeds.—The New Haven Medical Association stands in a queer relation to the property of Dr. Stephen G. Hubbard, which consists of grounds and a dwelling valued at $50,000. Dr. Hubbard, on May 11, 1901, deeded the property to the trustees of the New Haven Medical Association on condition that the association erect within three years after his death a building for its uses to cost not less than $10,000, the plans for which are to be submitted to him. The association recorded the deed. It was then discovered that a deed of the same property had been previously recorded conveying the property to a niece of Dr. Hubbard. Dr. Hubbard reserved the life use of the estate in both deeds.

ILLINOIS.

Personal.—Dr. Henry V. Bailey, Pekin, sailed for Glasgow, August 23.

Epileptic Home Burned.—The Illinois Home for Epileptics at Arlington Heights was burned, August 30. Through the efforts of the resident physician the inmates were rescued without casualty.

Lincoln Asylum Changes.—Dr. John R. Barnett, assistant superintendent of the Illinois Asylum for Feeble-Minded Children, Lincoln, has resigned, and Dr. Charles B. Taylor, Elkhart, appointed in his stead.

Chicago.

Personal.—Dr. Nicholas Senn has returned from his mission to St. Petersburg and a long journey to the Orient.

The University of Chicago.—At the recent convocation, President William H. Harper reported that the medical department had been paid a gift of $50,000, and that the expenses of the department for the year had been less than the estimated amount.

Deaths During August.—There were 2330 deaths from all causes reported to the health department during August, 1902, or 161 more in number and 3.9 per cent. more in the annual rate per 1000 of population, compared with the figures of August, 1901. The annual death-rate per 1000 was 15.06. The report shows that 610 children under one year old, died; that 597 deaths were caused by acute intestinal diseases; 193 by typhoid fever; 177 by violence; 181 by consumption and 136 by heart diseases.

Medical Arrangements for Labor Day.—On the line of march on Monday last five emergency tents were located, with thirteen physicians and five nurses in attendance. Three of these nurses were from the Visiting Nurses' Association and two from the Frances Willard Hospital. Dr. S. W. Cox was in charge of the headquarters tent at Michigan avenue. The day was free of serious accidents and fewer than a score of persons were in need of treatment, most of those treated being slight cases of overheat.

Efforts at Suppression of Typhoid.—When the excessive incidence of typhoid first forced itself on the attention of the department and study showed the so-called "storm center" to be located in the ghetto district, efforts for suppression were concentrated in those areas. But the work the department was able to do served mainly to show how futile and inadequate were its resources. Food, chiefly fruit and vegetables, unfit for human consumption, was condemned and sprinkled with kerosene, but the department had no authority similarly to sprinkle with kerosene the 20 per cent. of dwellings found in these areas unfit for human habitation.——Typhoid fever deaths contributed nearly 70 per cent., the respective numbers being 83 last August and 193, or 110 more, in the month just ended. This is the greatest number of August typhoid deaths ever recorded in Chicago. The highest previous August typhoid deaths were 182, in 1891. Since then the August deaths have been 179, 76, 52, 59, 64, 42, 45, 62, 34 and 83 for the respective years 1892-1901. These figures are cited to show that the department has been fomenting no unwarranted scare in its utterances on the typhoid situation during the last three or four weeks. They show an increase of fully 57 per cent. in the typhoid mortality of August, 1902, over the average August typhoid of the previous ten years.

NEW YORK.

New Medical Building for Cornell.—The contractor announces that the new medical building for Cornell will be ready for occupancy at the opening of the fall term.

Telephone-Receiver Infection.—Dr. Bissell, city bacteriologist of Buffalo, is to make bacteriologic examinations of receivers of public telephones with the idea of planning some method whereby infection from this source may be averted.

Buffalo Personals.—Drs. Roswell Park and Blair have returned from Europe.——Dr. Arthur J. Patek, Milwaukee, was the guest for a few days of Dr. Julius Ullman.——Dr. Jane W. Carroll was recently appointed supreme medical examiner of the Ladies' Catholic Benevolent Association.

Physiologic Laboratory Building.—The University of Buffalo Medical Department is building an additional story for the physiologic laboratory, at a cost exceeding $5,000. When the laboratories have been completed a prominent Buffalonian will completely equip them, thus making this laboratory one of the most complete in the country.

Fumigation of School Books.—The health department of Buffalo has undertaken to fumigate the 250,000 books used in the public schools. The old books will be placed in large receptacles and fumigated thoroughly with formaldehyd. Health Commissioner Green believes that danger of infection from communicable diseases will be averted in this way.

OHIO.

Bequest to Hospital.—By the terms of the will of the late Mrs. Katherine Aultman, $100,000 is bequeathed to the Aultman Hospital, Canton.

Youngstown Hospital Opened.—The new City Hospital at Youngstown, which has accommodation for 139 patients, and was given to the city by Myron C. Wicks, has been formally opened.

Declines Merger.—The efforts of President Thwing to make the medical department of Ohio Wesleyan University a part of the Western Reserve Medical School have been without result, as the university refuses to sell at the present time.

Personal.—Dr. Thomas A. Burke, Cleveland, has returned after a long course of special study abroad.——Dr. Royce D. Fry, Cleveland, has returned from Europe.——Dr. Frederick D. Barker, Dayton, has resigned from the medical department of the Ohio National Guard.

Found Guilty and Sentenced.—Dr. James H. Ferrell, Marion, who was found guilty of an attempt to commit an operation which contributed to the death of Miss Laura Hite of Wyandot County, some time ago, has been sentenced to the penitentiary for two years.

Did Not Substantiate Charges.—The society which caused the arrest of Dr. John L. Hoyer of Cleveland failed to substantiate its charges at the trial. The warrant charged that the physician failed to qualify under any section of the statute regulating the practice of medicine. He was accordingly acquitted.

Dr. Brand at Last Successful.—Health Officer Dr. Walter W. Brand of Toledo, who has been untiring in his efforts to secure for Toledo a contagious disease hospital, has at last succeeded. The mayor signed the ordinance providing for the issue of $20,000 in city bonds for the purpose of building the hospital.

Faculty Changes.—At Ohio Medical University, Columbus, Dr. John H. J. Upham has resigned as professor of principles of surgery and clinical surgery, and Dr. James U. Barnhill, elected in his stead; Dr. William McPherson was elected professor of chemistry, vice Prof. E. T. Watson, resigned; Dr. Theodore W. Rankin has been made full professor of therapeutics and clinical medicine.

PENNSYLVANIA.

Typhoid in Pittsburg.—Fifteen new cases of typhoid fever were reported in Pittsburg, August 22.

Many Apply.—The White Haven Sanatorium for Consumptives is overwhelmed with requests for admission. There are many on the waiting list. President Flick believes that at a cost of $6,000,000 tuberculosis could be stamped out of Pennsylvania in 15 years.

Personal.—Dr. Lena A. Benjamin, Bradford, sailed August 23 on the *Kroonland* for Antwerp, en route for India, where she is to take charge of a hospital at Nellore in the Madras Presidency.——Dr. Harris R. Lecrone sailed for Europe, August 16. He will take a three months' post-graduate course in Vienna.

Philadelphia.

Deaths of the Week.—Within the week ended August 30 there were 417 deaths from all causes as compared with 379 deaths for the previous week.

Personal.—Dr. George E. de Schweinitz has returned from a European trip.——Dr. John A. Passmore is seriously ill at his home.——Dr. and Mrs. Francis Correa of Germantown recently returned.——Dr. J. William White has made a trip over the Swiss Alps this summer.

Typhoid Epidemic Feared.—There are some grounds for fear of an epidemic of typhoid fever. For the week ended August 30 92 new cases and 10 deaths were reported. Only 56 new cases occurred the preceding week. The cases are distributed throughout the city and are probably due to an impure water supply.

Hospital Endowments.—By the will of the late Mary E. Jackson $5000 each, for the endowment of free beds, is bequeathed to the Pennsylvania Hospital and to the Protestant Episcopal Hospital. A reversionary bequest of $6000 is made to the Protestant Episcopal City Mission, in trust for the Hospital for Diseases of the Lungs, the purpose being the endowment of a free bed.

GENERAL.

New Resident at Molokai.—Dr. W. J. Goodhue, at present the physician and surgeon to Eleele plantation, Kauai, has been appointed resident physician to the Leper Settlement, Molokai, by the Hawaii Board of Health.

Discuss Cholera Situation in Manila.—The Board of Health held a joint meeting with the local physicians in Manila, July 11, for the purpose of considering the cholera question and to adopt measures for preventing the spread of the disease.

To Revise Regulations.—Dr. Arthur H. Glennan, U. S. M.-H. Service, Havana, has been appointed a member of the board of officers who have been selected to revise the regulations of the new Public Health and Marine-Hospital Service, and has started for New York.

Dysentery and Dhobie Itch Disappearing.—Surgeon-General Forwood has received recent advices that dysentery, which heretofore has caused more sickness and deaths than any other disease among the troops in the Philippines, has practically disappeared. It has succumbed to the strenuous efforts of the medical department for its eradication. Strict sanitary measures have been enforced, including the boiling of all drinking water, and rules for bathing, and particularly the washing of hands before handling food. Another source of great satisfaction to the medical department is the eradication of a tropical skin disease commonly called "dhobie itch." This disease, while not fatal, was considered almost in the nature of a scourge among the troops in the islands.

Cholera Situation Unchanged.—All hope of staying the cholera epidemic in the Philippines has been abandoned until the typhoon season sets in. Only light rains have yet fallen, serving only to stir up the streams and diffuse the cholera germs, and Surgeon-General Forwood says that no material change for the better can be expected until the heavier storms begin. He lays much of the blame for the spread of the cholera and its great mortality to the incapability of the majority of the Filipino doctors. So long as these were under the direct supervision of American officers they rendered valuable assistance in staying the epidemic, but when left to their own devices, through the reductions of the American force in the islands, he says, they have failed to carry out instructions, ignored the simplest rules of sanitation, and in many instances done more harm than good. The trickery of the natives in concealing new cases has also assisted in the spread of the disease.

Smallpox.

CONNECTICUT: In July 40 cases were reported in 4 towns. Thompson had 29 cases, New Britain 9, and Stamford and Waterbury each one.

ILLINOIS: Springfield is the only city reporting a case of smallpox to the State Board of Health during last week; the patient came from Patoka, Indiana.——There were but nine cases of smallpox discovered in Chicago during August, and of these only two were residents; of the remainder, three were importations from Cleveland, one from Wisconsin, one from Indiana and one from the state outside Chicago. None had ever been vaccinated; there were no deaths from the disease,

and at the close of the month there were only nine cases under treatment in the isolation hospital.

MARYLAND: Another case of smallpox is reported near Williamsport in the western part of the state. Several cases have previously existed in the suburbs of that town, which are still under quarantine and special treatment.

PENNSYLVANIA: The town of Parryville, Carbon County, is suffering from an epidemic of smallpox; nearly one-tenth of the population of 500 is affected by the disease. A strict quarantine has been established.

CANADA: There are now but four cases in the Montreal Hospital, and the disease will be wiped out in a very short time.

ENGLAND: The Metropolitan Hospitals, London, now contain only 305 cases of smallpox against numbers decreasing from 1515 to 369 on the 14 preceding Saturdays; 44 new cases were admitted in the last week against 51, 48, 23 in the three preceding weeks. During the second quarter of the year the number of fatal cases amounted to 507, against 35, 193 and 734 in the three preceding quarters, and an average of 11 in the second quarters of the ten preceding years. During the quarter 3215 cases were admitted to hospital against 286, 1491 and 4873 in the three preceding quarters.——The medical officer of health for Swansea has reported to the sanitary committee that smallpox, which has been prevalent at that port for some months, has assumed serious proportions, and is now in epidemic form.

BARBADOES: Smallpox has again made its appearance in this island, there being now 15 cases strictly isolated at the quarantine station, located on Pelican Island, separate from the mainland. The prevailing opinion among the physicians is that the disease is under control and will not become epidemic. No deaths have been reported by the Board of Health.

CANADA.

Montreal Death Roll.—The mortality statistics for the past week in Montreal show a total of 123 deaths. The principal causes of death were: Phthisis and other chest diseases, 26; infantile debility, 49; croup, 1; typhoid fever, 2; measles, 2.

Appointed Autopsist for Montreal District.—Dr. C. A. Dugas, who for some years was assistant to the late Dr. Wyatt Johnston, the autopsist for the district of Montreal, has been appointed by the Attorney General of the province of Quebec to succeed Dr. Johnston. He will have as his coadjutor Dr. D. D. MacTaggert.

Heavy Infant Mortality in Toronto During August.—The returns from the Toronto cemeteries during the month of August show a total of 246 interments, or 15 more than for the month of July. The total deaths from contagious diseases were three, all diphtheria. There were 111 children under five years of age interred, and 11 adults over 82 years, one over 90 and one 92 years of age.

Enforcing Montreal's Vaccination By-Law.—A case of some importance has been decided by Recorder Porier in regard to the right of the city of Montreal to enforce the by-law calling upon the employers of labor to compel employes to be vaccinated. The action was taken by the medical health officer to compel the vaccination of an employe of the Dominion Cotton Company. The recorder imposed a fine of $5 on the company.

FOREIGN.

Merida Hospital.—The contract for the construction of the Merida, Yucatan, hospital, for the sum of $900,000, has been given to Mexican contractors.

Esmarch's Birthplace.—The house in which Esmarch was born at Tönning, in Schleswig-Holstein, has been marked with a tablet by the local authorities.

Forged Diplomas at Barcelona.—The faculty at Barcelona have discovered that several persons are in possession of forged diplomas conferring degrees in medicine or law. All the diplomas issued in the last twenty-five years are now being revised and verified.

Recrudescence of Plague in Sydney.—On July 11 a rat infected with plague was discovered in Sydney, and a week later another rat dead from plague was found. It is reported that rats are dying in the district, and thorough inspection and cleansing of the affected locality have been made.

Prophylaxis Against Mosquitoes in France.—The French Conseil d'Hygiène recommends the usual measures against allowing stagnant water to accumulate, etc., and adds that fish should be kept in all public fountains, etc., and that a drop of tincture of iodin or of a 1 per cent. solution of guaiacol should be applied to every mosquito bite.

Statistics from the German Universities.—The number of medical students in Germany was 8141 in 1897, while at present it is only 6749, a decline of nearly 17 per cent. in the last five years. Berlin and Munich have about the same number of medical students as in previous years, 1018 and 1046 respectively, and the attendance at Rostock, Kiel and Heidelberg has increased. The decline is most apparent at Würzburg, Leipsic, Greifswald and Breslau.

The Prizes Offered by the Brazilian Academy of Medicine.—The Academy offers a gold medal and diploma for the best and second best works received during the academic year on the following subjects: Influence of malaria as a determining factor in aortic heart affections; fevers at Rio de Janeiro; clinical study of intestinal sutures; treatment of umbilical hernia; carcinoma of uterus; puerperal eclampsia; rôle of vegetable oxidases in therapeutics, and study of the mineral waters of Brazil, besides a few topics of merely local interest.

Golden Jubilees of German Physicians.—Our German exchanges this week bring a list of eight physicians whose friends have recently celebrated the fiftieth anniversary of their entrance upon their professional career. Among them is Dr. C. Schweigger of Berlin, who was decorated with the order of the Red Eagle on the occasion. L. W. Liersch of Kottbus was another. His name is well known by his works on ophthalmology and the history of medicine. Aufrecht of Frankfort a. O. closes the list. Several are "privy sanitary councillors" and one retired from active life two years ago.

Correspondence.

Gastroptosia not Gastroptosis.

NEW YORK, Aug. 19, 1902.

To the Editor:—In my letter which appeared in your issue for August 16 I noticed an error which may be either the printer's or my own slip of pen in manuscript. It reads "*epi* means on, upon or touching," while I wish to say "*peri* means on, upon or touching."

Being prepared to meet opposition—since it is generally believed that "*peri*" means around only—I ask you to insert this correction.

I know some of the Greek dictionaries are not explicit enough in regard to this word, and therefore allow me to say that not only in Greek spoken at present, but also in classical writers peri may distinctly mean "*upon*." Περὶ λίθον τεσεῖν (Aristophanes, Acharnians v. 1180). Περὶ νῆσον ἀλὼμενοι (Odyssey 4, 368).

A. ROSE.

[Dr. Rose's original letter shows that he was responsible for the error.—ED.]

The Relief of Itching in Ivy Poisoning.

ATTLEBORO FALLS, MASS., Aug. 28, 1902.

To the Editor:—Another remedy for the condition mentioned on page 441 of THE JOURNAL of August 23, itching of ivy poisoning, is to apply cloths rung out in a solution of grindelia robusta or eucalyptol and hot water, 1 to 10.

Respectfully, WILLIS L. HALE.

Book Notices.

AMERICAN EDITION OF NOTHNAGEL'S ENCYCLOPEDIA. Diphtheria.—By Wm. P. Northrup, M.D., of New York. Measles, Scarlet Fever, and German Measles.—By Professor Dr. Th. von Jurgensen, Professor of Medicine in the University of Tubingen. Edited, with Additions, by William P. Northrup, M.D., Professor of Pediatrics in the University and Bellevue Medical College, New York. Handsome Octavo, 672 Pages, Illustrated, Including 24 Full-page Plates, 3 of Them in Colors. Cloth, $5.00 net; Half Morocco, $6.00 net. Philadelphia and London: W. B. Saunders & Co. 1902.

This latest volume in the Nothnagel's series is devoted to the most common of the diseases met by the general practitioner, namely, diphtheria, measles, scarlet fever and German measles. The monograph on diphtheria, consisting of nearly 200 pages, is not from the German edition, but is written especially for this volume by Dr. W. P. Northrup, of New York. The author is to be congratulated on the exhaustive and practical manner in which he presents the subject. The remarkably favorable results from the use of antitoxin is shown by statistics which

are presented in a convincing manner and whose reliability can not be denied. The plates illustrating the introduction and removal of the intubation tube show in a most practical and helpful manner the various steps in this often necessary, but to the novice, dreaded operative procedure. As the author says, every general practitioner, and especially one who lives far from cities, should be familiar with the process of intubation, and the text and illustrations in this monograph will make the operation one of comparative ease. The bibliography at the end of the article is practically a complete one. The articles on measles, scarlet fever and German measles by Von Jürgensen are exhaustive treatises on these diseases, with numerous additions by the American editor. The so-called "fourth disease" is not mentioned by the German author but the American editor discusses the question briefly and apparently does not believe that the existence of the disease as an entity has been proven. All that has been said in regard to former volumes in this series should be repeated here, and as volume by volume is added to this English translation, the enterprise of the publishers is more and more appreciated.

A MANUAL OF OTOLOGY. By Gorham Bacon, A.M., M.D., Professor of Otology in Cornell University Medical College, New York. With an Introductory Chapter by Clarence J. Blake, M.D., Professor of Otology in Harvard Medical School, Boston. New (3d) Edition. In One Handsome 12mo. Volume of 437 Pages, with 120 Engravings and 7 Plates in Colors and Monochrome. Cloth. Price, $2.25 net. Philadelphia and New York: Lea Brothers & Co.

This condensation of the general principles of otology is designed as a work of easy reference for the student, and the book has been considerably enlarged and a number of original illustrations added and some new topics introduced, including lumbar puncture and the significance of leucocytosis in oral diseases.

THE ROLLER BANDAGE. By William Barton Hopkins, M.D., Surgeon to Pennsylvania Hospital. With Illustrations. Fifth Edition, Revised. Cloth. Pp. 162. Price, $1.50. Philadelphia: J. B. Lippincott Co. 1902.

While this little volume, which here appears in its fifth edition, is called the "Roller Bandage," it is in fact a treatise of bandaging in covering the general principles. It is nicely illustrated with completely new illustrations.

State Boards of Registration.

Report of Examination in Indiana.—Dr. W. T. Gott, secretary of the Indiana State Board of Medical Registration and Examination, reports the examination held at Indianapolis, July 8 to 10, as follows: Number of subjects, 18; number of questions, 130; percentage required to pass, 75. The examination was written. Number examined, 73; passed, 67; failed, 6.

PASSED.

Candidate.	Sch. of Pract.	College.	Year Grad.	Per-cent.
274	R.	Jefferson Medical College	1899	89.5
277	R.	Jefferson Medical College	1902	92.7
254	R.	Rush Medical College	1902	91.6
275	R.	Rush Medical College	1897	83.7
260	R.	Rush Medical College	1902	92.3
213	R.	Rush Medical College	1902	88.3
214	R.	Rush Medical College	1902	95.2
215	R.	Rush Medical College	1902	89.5
217	R.	Rush Medical College	1902	89.0
219	R.	Rush Medical College	1902	91.6
221	R.	Rush Medical College	1902	93.0
228	R.	Rush Medical College	1902	91.8
271	R.	Rush Medical College	1902	93.6
222	R.	Rush Medical College	1902	92.3
266	R.	Rush Medical College	1877	79.5
253	R.	Medical College of Indiana	1902	90.8
232	R.	Medical College of Indiana	1902	92.1
264	R.	Missouri Medical College	1878	79.1
282	R.	Medical College of Ohio	1902	88.8
251	R.	Medical College of Ohio	1902	83.4
252	R.	Medical College of Ohio	1902	79.6
247	R.	Medical College of Ohio	1902	85.2
276	R.	Medical College of Ohio	1877	81.3
279	H.	Kansas City Homeopathic Med. Coll.	1901	79.3
233	R.	Laura Memorial Woman's Med. Coll.	1902	87.8
225	R.	University of Nashville	1902	91.5
224	R.	University of Nashville	1902	90.2
249	H.	Chicago Homeopathic Medical College	1902	81.3
270	R.	Louisville Medical College	1902	88.0
212	R.	Louisville Medical College	1902	93.5
210	R.	Louisville Medical College	1902	89.5
211	R.	Louisville Medical College	1901	87.3
267	R.	College of Phys. and Surgs., Chicago	1902	88.8
218	R.	College of Phys. and Surgs., Chicago	1902	89.8
220	R.	College of Phys. and Surgs., Chicago	1902	86.4
268	R.	College of Phys. and Surgs., Chicago	1902	86.8
226	R.	Miami Medical College	1901	92.4
283	R.	Miami Medical College	1889	84.5

PASSED.

Candidate.	Sch. of Pract.	College.	Year Grad.	Per-cent.
246	R.	Miami Medical College	1892	83.7
216	R.	Washington University, St. Louis	1902	79.5
259	R.	University of Louisville	1898	80.0
236	R.	University of Louisville	1902	78.1
245	R.	University of Louisville	1902	90.9
272	R.	University of Louisville	1902	90.0
278	H.	Hahnemann Medical College, Chicago	1902	90.0
237	H.	Hahnemann Medical College, Chicago	1880	88.5
220	H.	Homeopathic Medical Coll., St. Louis	1902	88.5
262	E.	Eclectic Medical Institute	1902	78.8
258	E.	Eclectic Medical Institute	1902	86.8
255	E.	Eclectic Medical Institute	1902	90.0
223	R.	Coll. of Phys. and Surgs., New York	1902	93.4
230	R.	Hospital College of Med., Louisville	1902	90.4
235	R.	Hospital College of Med., Louisville	1902	92.4
238	R.	Hospital College of Med., Louisville	1902	90.4
273	R.	Hospital College of Med., Louisville	1902	91.0
280	R.	Hospital College of Med., Louisville	1902	85.3
284	R.	Hospital College of Med., Louisville	1902	86.5
239	R.	University of Michigan	1902	91.1
241	R.	University of Michigan	1902	87.3
234	R.	University of Michigan	1902	90.4
242	H.	University of Michigan	1902	87.2
240	R.	Medical College of Fort Wayne	1902	90.5
263	R.	University of Virginia	1900	78.0
269	E.	Bennett Medical College	1902	88.8
261	R.	Keokuk Medical College	1902	88.4
248	R.	Western Pennsylvania Medical College	1888	83.7
250	R.	Boston University	1901	90.4

FAILED.

256	R.	Kentucky School of Medicine	1901	*69.5
285	E.	Eclectic Medical Institute	1881	†
231	R.	Cincinnati College of Med. and Surg.	1890	59.2
243	R.	Barnes Medical College	1902	†
244	R.	Royal University, Budapest	1900	†
286	H.	Hahnemann Medical College, Chicago	1900	†

* Third examination. † Incomplete.

Married.

JOHN L. GISH, M.D., to Miss Anna Hill, both of South Bend, Ind., August 23.

HENRY S. BENNETT, M.D., to Miss Helen Crossman, both of Moline, Ill., September 4.

ASA B. LEINBAUGH, M.D., to Miss Laura D. Sauer, both of Bellevue, Ohio, August 20.

MARY PAULSELL, M.D., to H. W. MITCHELL, M.D., both of Danvers, Mass., August 16.

FRANK KENDIG, M.D., Chicago, to Miss Minnie Valeria Tyre of Lebanon, Ind., September 3.

GEORGE DE TARNOWSKY, M.D., Nice, France, to Miss Bertha Nixon of Chicago, September 3.

ROBERT H. EAMES, M.D., Taylor, Texas, to Miss Florence Hill of Austin, Texas, August 12.

LOUIS KOLIPINSKI, M.D., to Miss Ella Mercedes Soehngen, both of Washington, D. C., August 20.

FRANCIS F. GRILLET, M.D., Farwell, Mich., to Miss Mary H. Stuart, at Grand Rapids, Mich., August 20.

WILLIAM FOSTER, JR., M.D., Princeton, N. J., to Miss Helen Dunham Stewart of Warren, Ohio, September 3.

Deaths and Obituaries.

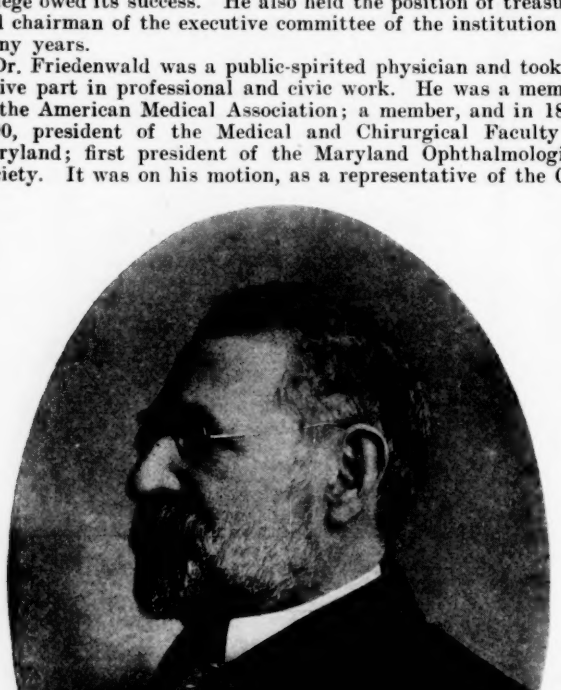
Aaron Friedenwald, M.D.

Dr. Aaron Friedenwald died at Baltimore, August 26, from the effects of an operation undertaken for the relief of cancer of the stomach, aged 65. He had suffered from gastric symptoms for some months past. Early in May he went to Europe, and, August 1, the diagnosis of carcinoma was made. Dr. Friedenwald at once returned to Baltimore. August 20 an operation revealed such extensive involvement of the structures about the pylorus as to make only a gastro-enterostomy possible. The operation was concluded with satisfaction and hopes were entertained that he would recover from it. But vomiting set in, with uncontrollable hiccough, and he died six days later.

Dr. Friedenwald held a high rank in the medical profession of this country. He was born in Baltimore, Dec. 20, 1836. He obtained his medical degree at the University of Maryland in 1860, and was a student in the office of Prof. Nathan R. Smith. He then spent two years in Germany preparing himself under Von Graefe and other great specialists in Berlin, Vienna, Prague and Paris for the practice of his chosen specialty. Returning to Baltimore he entered upon practice as an ophthalmologist and otologist, which he continued up to the time of his

last illness. In 1873 he became a member of the faculty of the College of Physicians and Surgeons, and was always one of its most steadfast supporters. To him in very great degree the college owed its success. He also held the position of treasurer and chairman of the executive committee of the institution for many years.

Dr. Friedenwald was a public-spirited physician and took an active part in professional and civic work. He was a member of the American Medical Association; a member, and in 1889-1890, president of the Medical and Chirurgical Faculty of Maryland; first president of the Maryland Ophthalmological Society. It was on his motion, as a representative of the Col-



DR. AARON FRIEDENWALD.

lege of Physicians and Surgeons, that the Association of Baltimore Medical Colleges, in 1890, became a national organization at Nashville. He was a frequent contributor to the medical journals and to the proceedings of medical societies.

Andrew M. Armstrong. M.D. Willoughby Medical College, Fairfield, N. Y., 1832, one of the oldest physicians in Ohio, died at his home in Doylestown, August 21, aged 94. Dr. Armstrong located in Doylestown in 1837, and practiced his profession there for over sixty years. In 1880 he was elected to the state legislature, serving two terms.

Ellis Clarence Garee, M.D. College of Physicians and Surgeons, Baltimore, 1890, died at Baltimore, from typhoid fever, August 30, aged 41. He was a health warden of the city and president of the Southwest Baltimore Improvement Association.

George Whitfield Kemper, M.D. University of Pennsylvania, Philadelphia, 1836, died at Madison Hall, Port Republic, Va., August 19, aged 87. He had practiced in Rockingham County continuously for sixty years.

Edward N. Riggs, M.D. Cincinnati College of Medicine and Surgery, 1874, died at his home in Bridgeport, from the effects of a self-inflicted gunshot wound of the head, August 21, aged 57.

Philip Shaffer, M.D. Rush Medical College, Chicago, 1864, died at his home in North Manchester, Ind., August 22, after an illness of several months.

Frank J. Seabourne, M.D. Medico-Chirurgical College, Philadelphia, 1899, died, August 17, at his home in Bordentown, N. J., aged 33.

Jacob K. Hecker, Jr., M.D. Medico-Chirurgical College, Philadelphia, 1901, died at his home in Philadelphia, August 13, aged 27.

Miscellany.

No physician can afford to be indifferent regarding the accurate filling of his prescription.—*St. Paul Medical Journal.*

Tests of Uric Acid Solvents by Solubility of Their Urates.—Vicario reports in the *Gaz. des Hop. de Toulouse*, No. 22, that assuming the efficacy of a uric acid solvent to be proportional to the solubility of the urate which it forms, lycetol takes the highest place, lysidin second, while piperazin and urotropin came third in his tests. They were followed in turn by potassium bicarbonate, lithium carbonate and sodium bicarbonate. Lycetol is the tartrate of dimethylpiperazin.

A Remarkable Case of Fecundity.—"At the present time when so many medical writers are deploring the fact that so large a proportion of our native women refuse to bear children, it might be well to record the case of one who has done more than her share of duty toward the state." Thus speaks the *Medical Age* and tells of an intelligent American-born woman of 43, who was married at 13, and in these 30 years has borne 24 children, of whom 20 are living. The question arises: Are these children all of such health and character that the birth and rearing of each was really a service to the state?

Opium Eating in Hawaii.—Hawaii is said to be a paradise for the opium eater. Nowhere else is its sale so unrestricted or its use so widespread as in this territory since its annexation. Under the provisional government opium was in the sole control of the Board of Health. After annexation these laws were declared obsolete, and, according to the *Boston Transcript*, there is no restriction now as to the use of the drug or its sale. Nearly as much of the drug is taken to the islands as to the entire United States. An effort is to be made to enact some law against its use which will stand in the courts.—*American Medicine.*

Treatment of Lupus by Potassium Permanganate.—A recent Paris thesis states that Hallopeau has been very successful since 1900 in treating lupus with permanganate. He applies it as a powder on non-ulcerated lupus after washing the patches with soap and drying. He covers with dry cotton and leaves it for 15 minutes. He then rinses it off with warm water and applies a wet compress. A single application is usually sufficient, if not it can be repeated after an interval of a few days to allow healing and cicatrization. He sometimes uses a 1/50 solution, applying it on a compress and covering with oiled silk for 15 minutes. It is then rinsed off and replaced by a wet compress. This is repeated every day until cure is complete. The solution is not painful but the powder causes slight smarting, and in two cases the pain was severe until cocain or chloral was applied.

Meat-Juice and Marking Ink.—Of all places in the world a hospital for the sick should be administered with rigid attention to detail and order. That such is not always the case is abundantly shown by the reports of the coroners' courts. Hardly a week elapses without the tale of some death in a public institution of the kind due to gross negligence and want of method. Not very long ago we commented severely upon the carelessness which allowed strong carbolic acid to be left lying about in a ginger-beer bottle at one of our leading London hospitals. The result was the death of a workman who took a pull at the bottle under the impression it contained some harmless beverage. The latest scandal of the kind comes from the fever hospital near Bromsgrove, where marking ink was given in mistake for meat juice to two scarlet fever patients. Will it be believed that in a public hospital marking ink was habitually kept in a meat juice phial and left where it could be administered to a patient! It is all very well for a hospital committee, wise after the event, gravely to censure a nurse for stowing away the marking ink along with medicines and food. The fault lies with the system, or lack of system, that allows marking ink to be placed in any but a properly labeled and distinctive bottle of its own. Most marking inks are poisonous. It would be interesting to know what are the ward regulations at the Bromsgrove Infectious Hospital regarding poison bottles and poison cupboards; or do the dispensers utilize odd bottles

and phials for all poisons needed in the wards?—*Med. Press* (London).

The Food of the Infant.—It is all very well to say that an infant shall be fed day after day, week after week, month after month, a certain definite amount of food of a certain exact composition, at times regulated by the clock. . . . On the other hand, the perfectly healthy growing child should be allowed some choice as to the quantity, time and quality of its food. In the first place, the child should be satisfied after taking its bottle, so that the quantity should be somewhat adjusted by the capacity of the child's stomach. An excess in quantity is very soon indicated by regurgitation. The strength of the milk should be frequently increased, so that the child shall take the strongest milk that it can comfortably digest, and if a child is restless and hungry before the set time is up anticipation of the time of feeding will often save a nervous strain and consequent sleeplessness and restlessness, and so be a blessing to everybody. I not infrequently see children who are perfectly healthy, and yet are a burden to their whole family connection on account of sleeplessness and restlessness, when the entire trouble is that the children do not get enough to eat. They are being fed according to some very strict system, and they have probably outgrown the formula used for the modification of the milk. They are not getting enough to satisfy them, and the feedings are separated by a period of perhaps four hours, which is about the limit that any baby will stand. Let these children gorge themselves a few times with a large quantity of good food, even if they do regurgitate a little, and they will then have a few good sleeps, and the whole picture will change.—Bishop in *Medical Critic*.

Prophylaxis and Treatment of Affections of the Biliary Passages.—W. N. Clemm of Darmstadt states that the main point in prophylaxis is to maintain an almost continuous flow of bile by taking the food in such a way as to elicit a constant production. In case there is any stoppage of bile, the flow should be restored by energetic deep breathing, light massage or the rolling of the ball proposed by Rose and others for chronic constipation. All catarrhal gastrointestinal affections should be thoroughly treated. A glass or two of milk should be taken before rising in case of the slightest suspicion of stoppage of the flow of bile. While dressing, one or two cups of very hot physiologic salt solution should be sipped, and after exercises in deep breathing, a twenty to thirty minutes' walk in the open air should follow. There should not be more than two or two and a half hours' interval between meals, with milk between at least twice, and the deep breathing exercises should be repeated before dinner and before retiring. The patient should sleep on his left side to promote the flow of bile and the emptying of the large intestine. Abrupt movements should be avoided and the earliest and last meals should be principally albumin and fats. These measures should be supplemented by taking for at least three months at evening and morning and, during an attack, also at noon, .75 gm. of sodium oleate in solution, not pills, with or without tincture of valerian or validol. The sodium oleate or eunatrol has a cholagogue action and softens the gallstones and dissolves cholestearin. During a severe attack he advises Carlsbad water as hot as it can be sipped, taken every ten to fifteen minutes up to six or eight glasses, supplemented by flaxseed poultices to the region, while the patient reclines for three hours morning and afternoon.—From *Wiener Med. Presse*.

Clippings from Lay Exchanges.

THE NEWS FROM WATER VALLEY.

"We are glad to state that Mrs. Beulah Hutcherson is improving slowly, she has been confined to her room for eight weeks with Dr. Walker her attending physician.

"Mr. Ab Roach is still very feeble and not able to sit up, many are having chills.

"Mrs. Mary Booker is also very sick, she has been confined to her room for some months and is gradually growing weaker each day.

"Dr. Arnold is now making his home at Water Valley, he seems to be a very prominent young physician. The death angel visited the home of Mr. James Jones the 11th and called him away from his wife and three children. Mr. Jones has been for some time a victim to that great disease consumption, a week before he died he had an attack of meningetis and suffered oh so much, but we would say to his friends and relatives that we trust his sufferings are over for he seemed to be reconciled to die, said he was ready; what a blessed thought. Grieve not dear friends as your loss is his gain. He was buried at Finch Graveyard near Alexander with Brother Hensley and Gray conducting the funeral service, there was a very large crowd in attendance.

"Professor Beasley has moved to Etna Furnace, and is practicing medicine there, the people were very much disappointed in regard to his quiting his school so early as he only taught one month."—*Columbia* (Tenn.) *Democrat*, May 16, 1901.

REMARKABLE OPERATIONS.

"Eyes Removed from the Head, Washed and Restored to their Place—Sight Followed.—Toledo, O., April 17—Two remarkable operations on eyes were performed at St. Vincent's hospital. M——'s eyes had been destroyed in an explosion of gunpowder about 12 years ago, and since that time he has been totally blind. The physicians yesterday removed the blind eyes from their sockets, rubbed them, cut off a scum that had accumulated, and replaced them in their sockets.

"M—— blinked for a few seconds, rubbed his eyes and to the astonishment of everybody present, announced that he could see as well as he did before his eysight was destroyed. The physicians tested him for a few minutes in regard to color, and gave him knot of spun wool in varied hues to make comparisons and selections from, and he did so without a mistake. After the tests the physicians darkened the eyes so that the light might not destroy them.

"Another equally as startling an operation was that on P. F. W.'s 16-moths-old baby, which was born blind. The same physicians removed the eyes of the child, cleaned them, cut off a scum that resembled the shell of a nut, and then replaced the eyes. To the surprise of everybody the child began to observe things."—*Newark* (Ohio) *Tribune*, April 17, 1902.

A METALLIC SURGEON.

"Tom V—— of Mattoon was in the city Tuesday. Mr. V—— is manufacturing an aluminum surgeon's chair that is meeting with great sales. . . ."—*Greenup* (Ill.) *Press*, March 13, 1902.

TUBERCULOSIS AND PHTHISIS.

"Tuberculosis of the lungs carried off twenty-five of the victims of disease last month. Seven others died of tuberculosis and four of phthisis."—*Los Angeles* (Cal.) *Express*, Aug. 6, 1902.

GASTRONOMIC SURGERY.

"Dr. ——, who has been in Touro Infirmary for some time, being treated for cancer of the stomach, has been gradually getting worse. . . . It is feared that the patient will die under the knife, but it has been decided to attempt the operation as a last resort.

"This is a most interesting case from a scientific point of view, as the result may revolutionize gastronomic surgery."—*New Orleans* (La.) *Picayune*, Sept. 14, 1901.

LAPAROTOMY OF THE INTESTINES.

"The annual meeting of the New London County Medical Association was held Thursday afternoon. . . . Dr. —— of Norwich followed with a paper describing his now famous operation of laparotomy of the intestines."—*Norwich* (Conn.) *Bulletin*, April 4, 1902.

A WARNING TO CACHINNATORS.

"Westville, Ind., man rips his lining while cachinnating and condition is serious. La Porte, Ind., Dec. 6.—(Special.)—If

—— of Westville, this county, recovers he will eschew laughing. Yesterday his risibilities were affected to such an extent that he laughed so hard the inner membranes were torn loose from his lower ribs, according to the claims of the attending physician."—*Chicago Tribune*, Dec. 7, 1901.

WAS HE A SURGEON?

"Dr. ——, one of Huntsville's oldest citizens, died last evening at ten minutes past seven o'clock after suffering about two weeks with paralysis of the brain. . . . For many years he was one of the leading butchers of Huntsville, but during recent years he has spent his time in retirement."—*Huntsville* (Ala.) *Mercury*, Aug. 8, 1902.

CYSTED ABDOMIAL ABSCESS REMOVED.

"Monday, Drs. —— of Vincennes and —— of this city performed a delicate surgical operation on —— in this city. Six months ago —— was injured in the abdomial regions from which a cysted abscess formed. The physicians above mentioned made an incision and removed a large abscess almost the size of a gallon vessel."—*Lawrenceville* (Ind.) *Republican*.

DID SHE CATCH THE CAR?

"B. —— entered suit against Dr. —— for $50,000 damages. . . . She alleges the defendant was called to her home, December 19, 1900, to attend her and that he carelessly and negligently treated her, and then abandoned her while she was suffering great agony to catch a car."—*Pittsburg* (Pa.) *Dispatch*, Nov. 16, 1901.

(To be continued.)

Societies.

COMING MEETINGS.

Wyoming State Medical Society, Chevenne, Sept. 9-10, 1902.
Medical Society of the State of Pennsylvania, Allentown, Sept 16-18, 1902.
American Association of Obstetricians and Gynecologists, Washington, D. C., Sept. 16-18, 1902.
Medical Society of the Missouri Valley, Sioux City, Iowa, Sept. 18, 1902.
American Dermatological Association, Boston, Sept. 18-20, 1902.
American Academy of Railway Surgeons, Kansas City, Mo., Oct. 2-3, 1902.
Medical Association of District of Columbia, Washington, Oct. 7, 1902.
Idaho State Medical Society, Moscow, Oct. 9-10, 1902.
Vermont State Medical Society, Burlington, Oct. 9-10, 1902.
Mississippi Valley Medical Association, Kansas City, Mo., Oct. 15, 1902.

Woodford County (Ky.) Medical Society.—This society was organized at Versailles, August 15, with the following officers: Dr. John C. Lowry, Troy, president, and Dr. William C. McCauley, Versailles, secretary.

St. Louis Medical Society of Missouri.—The committee on Osler memorial address announces that Prof. William Osler of Johns Hopkins University, Baltimore, will deliver a memorial address on "William Beaumont, the First and Greatest American Physiologist," October 4.

Mississippi County (Ark.) Medical Society.—This society was reorganized last month, under the new constitution and by-laws, required by the American Medical Association, through Arkansas State Medical Society, and is officered as follows: Dr. Thomas G. Brewer, Osceola, president; Dr. Charles A. Turner, Osceola, vice-president; Dr. H. Clay Dunavant, Osceola, treasurer, and Dr. George A. Hennings, Butler, secretary.

Prince Edward Island Medical Society.—The annual meeting of this society was held at Charlottetown, July 9. After the general business was transacted, the society adjourned in order to attend the meetings of the Maritime Medical Association, which were being held at the same time and place. Dr. Frederick F. Kelly was elected president; Dr. Peter Conroy secretary, and Dr. Robert B. Shaw treasurer, all of Charlottetown.

International Surgical Association.—The approaching congress of the Belgian Surgical Society to be held at Brussels September 8, is to be distinguished by an earnest effort to organize an international surgical association. Dr. C. Willems, the president of the congress, is the prime mover in the matter. One of the aims of the international association is to establish a uniform outline for the study of the most important questions in surgery and to discuss them on a common basis.

French Medical Society of North America.—The first meeting of the French Medical Society of North America at Quebec, June 25 to 27, was mentioned in this column August 23. The next meeting is to be held in Montreal in 1905, under the following officers: President, Dr. A. Achille Foucher, Montreal; vice-presidents, Drs. Michael J. Ahern, Quebec; A. Wilfred Petit, Nashua, N. H., and Dr. Edward H. Rouleau, Calgary, N. W. T., and general secretary, Dr. Lesage, Montreal.

International Congress for the Care of the Insane.—This congress, now in session at Antwerp, is discussing the questions of the care of the insane at home and in institutions; which classes of insane belong in institutions; the scientific and economic fundamentals of the organization of official colonies and institutions for the insane, are the reasons for organizing new colonies, and the best means of founding and establishing such. Dr. F. Sano, rue Montebello 4, Antwerp, Belgium, is the secretary of the congress.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

Granular Conjunctivitis.

B. Melconian, according to an abstract in *Amer. Med.*, states that an application of a solution of iodin produces more satisfactory results in granular conjunctivitis than any other medication. He recommends the following:

℞.	Metallic iodi	gr. i	06
	Liq. vaselini	℥i 30	

M. Sig.: To be used locally.

The foregoing solution may be modified to suit the case. In acute cases or in young individuals, the quantity of iodin should be reduced one-half. The affected eyes should first be cleaned with a tampon dipped in a boric acid solution. The lids should then be turned and the iodin applied to the granular areas by means of the end of the finger in order that light massage may be given to the lid at the same time. The lids should then be kept closed for five or ten minutes and protected from dust and strong light. This treatment should be repeated morning and evening and in the middle of the day one or two drops of the solution should be instilled into each eye as a collyrium, which may be followed by light massage over the closed lids. The author states that immediately after the treatment the eyes become red, there is lachrymation and some photophobia. These symptoms disappear in from one-half to one hour, as a rule. In some cases, however, the symptoms persist for several days. In such cases the treatment should be begun with a 1 per cent. ointment of yellow mercuric oxid. This treatment, he states, should be continued for three to six months.

Dropsy Due to Heart Disease.

According to the *Cyc. of Med.* digitalis is contraindicated in marked atheroma of the blood vessels, aneurism, apoplexy and other states of arterial excitement and in gastric irritation. The following combination is, however, recommended in dropsical conditions caused by an incompetent right heart:

℞.	Tinct. digitalis	℥i	4
	Tinct. scillæ	℥ii	8
	Spts. juniperis co.		
	Pot. acetatis, āā	℥iv	16
	Vini albi q. s. ad	℥vi	180

M. Sig.: One tablespoonful three or four times a day; or:

℞.	Pulv. digitalis		
	Pulv. scillæ, āā	℥ss	2
	Pot. nitratis	℥i	4

M. Ft. pil. No. xxx. Sig.: One pill three times a day.

Prostatic Disease.

J. H. Dowd, in an abstract in *Med. Standard*, has introduced a new psychyrophore for the direct application of hot water to the prostate gland through the rectum. The instrument has a collar of hard rubber where it is grasped by the sphincter, thus making it a non-conductor of heat and making it possible to use much hotter water. Although pure water alone may be used, it is better to use the normal saline solution at a temperature of 100 to 110 F. To promote absorption of the inflammatory exudate the author recommends the use of the following suppository, to be inserted as soon as the tube is withdrawn.

R.	Ichthyol ..... gtt. ii	12
	Ext. belladonnæ ..... gr. ¼	015
	Ext. hyoscyami	
	Pot. iodidi, āā ..... gr. i	06

M. Ft. suppos. No. i. Sig.: To be inserted as directed.

Hemorrhages in Infectious Diseases.

Roger, in *Jour. des Praticiens*, as noted by *Amer. Med.*, states that in hemorrhages from the lungs and kidneys during the infectious diseases, the patient should be immobilized and bathing discontinued. If the patient is restless, delirious or if there is much cough he should be calmed by opiates. Following these precautions, acid drinks such as citric or sulphuric lemonade are often prescribed to increase the coagulability of the blood. The following has been used in hemorrhagic smallpox:

R.	Acidi sulphurici		
	Alcoholis, āā	℥ss	2
	Syrupi	℥iii	90
	Aq. destil.	℥xiii	390

M. Sig.: To be used as a drink.

Calcium chlorid has, in some cases, given good results. This preparation, however, can not be employed hypodermically as it causes sloughing and eschars. The author prescribes it in doses of one dram daily, which is usually sufficient to control the hemorrhages, although the dose may be increased to three drams daily. He recommends it in the following form:

R.	Calcii chloridi (crys.)	℥i-iss	4-6
	Rum	℥i	30
	Tinct. cinnamomi	℥i	4
	Aq. destil.	℥ii	60

M. Sig.: To be taken, during twenty-four hours, in divided doses. The alcohol should be omitted if lesion of the kidney exists. In hemorrhagic nephritis the hematuria disappears rapidly in two or three days. When the source of hemorrhage is accessible, very hot or very cold applications may be employed. Hemorrhages from the mucous membranes may be arrested by the application of antipyrin, which produces local constriction. Alum, tannin and rhatany are the astringents usually employed. According to his statement, Carnot has had good results from the use of the following in vaginal and nasal hemorrhages:

R.	Gelatin (white)		
	Sodii chloridi, āā	℥iiss	10
	Hydrarg. bichlor.	gr. viiss	50
	Aq. destil.	℥iiiss	105

M. Sig.: Apply locally.

Continuous Vomiting of Pregnancy.

M. R. Condamin, in *Indian Med. Record*, advises absolute rest of the stomach with complete suppression of all liquid and solid nourishment for eight or ten days. During this time three or four quarts of artificial serum are injected daily, preferably into the rectum. If intolerance should appear on the part of the rectum a few drops of laudanum may be added to the serum, or it may be administered subcutaneously. About the tenth day a few swallows of liquid food may be allowed, and the ordinary diet may be gradually resumed. The author reports one typical case, and believes that many cases may be carried to term in this way, in which, otherwise, abortion would result or would have to be induced.

Dietetic Treatment of Summer Diarrhea.

Dr. L. Fischer, in *Med. Record*, states that it is frequently necessary to stop milk feeding in cases of diarrhea of children or in the presence of fever or gastroenteric disorders. In such cases the author recommends for temporary use when vomiting or diarrhea persists either barley water, four ounces, or oatmeal water, four ounces, to be given every two or three hours. The feeding may be sweetened with granulated sugar half a teaspoonful to each bottle, or if fermentation is present as demonstrated by colic, eructations or green stools, half a grain of saccharin may be substituted for the sugar. To make barley water, Dr. Fischer recommends one tablespoonful of ground barley flour be added to one pint of water. This should be boiled for half to one hour, strained and enough water added to make a pint of barley water. If constipation should follow the use of the barley water, one teaspoonful of glycerin added to each teacupful of barley water will make it more palatable and will usually correct the constipation. Oatmeal water may be prepared in the same way as barley water. In cases where the child is underfed the white or yolk of a raw egg, well beaten, may be added temporarily. Whey feeding is necessary in some cases. His formula for making whey is as follows: Take a half pint of fresh milk heated luke warm (115 F.) and add one teaspoonful of essence of pepsin and stir slightly. Pour into custard cups and let it stand until it curdles; then beat with a fork until the curd is finely divided and strain. The whey may be administered as follows: For an infant under six months:

Whey, ℥ii; milk, ℥i.

Warm to 100 F. for three minutes and feed. This amount may be given every two or two and one-half hours.

For a child two to four months old:

Whey, ℥ii; milk, ℥ii.

Sig.: To be given every three hours. If this is well borne it can gradually be increased to two and a half ounces of each. Or if the child appears hungry after feeding three ounces of each may be given once in three hours. The author states that some infants three months old can easily take six ounces of food. The weight should be noted, and if the child does not thrive properly the amount of milk may be increased and the whey decreased.

Infantile Diarrhea.

The following is recommended by H. C. Hahn in *Jour. des. Pract.* in the treatment of diarrhea of infancy:

R.	Tinct. iodi	gtt. x-xv	65-1.
	Syr. simp.	℥ss	15
	Aq. destil. q. s. ad	℥v	150

M. Sig.: One teaspoonful every two hours.

Neuralgia.

The following combination is recommended by *Prog. Medical* in the treatment of neuralgia:

R.	Ext. hyoscyami	
	Ext. cannabis ind.	
	Pulv. aconiti rad.	
	Pulv. belladonnæ rad., āā ..... gr. 1/3	02

M. pilula No. i. Sig.: One to three such pills daily.

Medicolegal.

Waiver of Privilege by Applicant for Insurance.—Where an insured, on behalf of himself and those claiming an interest in the policy, waived the provisions of law forbidding any physician or surgeon from disclosing information acquired while attending him in a professional capacity, the Court of Appeals at St. Louis holds, in Keller vs. Home Life Insurance Company, that such waiver was binding on the beneficiary in a suit on the policy, and that it was error for the trial court, in this case, to exclude testimony concerning the state of health of the insured by physicians who attended him shortly before his application. It is settled law, the court says, that a patient may waive for himself the protection of secrecy imposed by the Missouri statute (section 4659 of the Revised Statutes of 1899) on the physician or surgeon who attends the patient in a professional capacity, touching the disclosure of facts acquired by the former in that intimate relation. And if the patient himself may make such a waiver in advance,

as seems in accord with principle, the court says that it does not see why he may not make such a waiver an element of his contract of insurance, and, having done so, the waiver will be binding on all who come within its terms. In other words, such a waiver may be made in advance, as in this instance, so as to be binding on a beneficiary of the contract other than the party making the waiver.

Appeal from Decision of Board of Medical Examiners.—The Supreme Court of Montana says, in State ex rel. Riddell and others, State Board of Medical Examiners, vs. District Court, that it was urged that a notice of an appeal to the District Court from a decision of the board should have been entitled by the name of the party appealing vs. The Board of Medical Examiners of the State of Montana, and that not being so entitled, it was not sufficient to give the District Court jurisdiction of the appeal. But the Supreme Court holds that there was no merit in this contention. It says that section 1892 of the Code of Civil Procedure provides, "An affidavit, notice or other paper, without the title of the action or proceeding in which it is made or with a defective title, is as valid and effectual for any purpose as if duly entitled, if it intelligibly refer to such action or proceeding." Though the proceeding on the appeal in such cases as that under consideration is not properly an action, in the strict sense of the term, but a special proceeding, it should, perhaps, have been entitled as contended; yet the failure of the clerk to so entitle it did not affect the merits of the controversy. Then it did not appear whether the board was represented at the trial. However, this was of no moment, the Supreme Court says, the notice in the case having been sufficient to meet the requirements of the statute. It contained intelligible reference to the decision of the board, by which the party appealing felt aggrieved, and his purpose to appeal therefrom. That the board allowed the appeal to go by default, if such be the fact, did not affect the case. Furthermore, upon the theory that the board was the person aggrieved by the action of the District Court in reversing the action of the board and declaring the applicant entitled to a certificate, the proper course to be pursued by it was to appeal to the Supreme Court from the judgment, as provided in the statute, or to move for a new trial. Under the statute no formal pleadings are required. Wherefore, the district had jurisdiction of the appeal from the board, and to render the particular judgment stated, and the board's application for a writ of certiorari must be denied.

Failure to Introduce X-Ray or Expert Evidence.—According to the fourth appellate division of the Supreme Court of New York, the party suing in the personal injury case of Kane vs. the Rochester Railway Company testified or gave evidence tending to show that his side was injured in such manner that a hernia resulted; that three fingers of the left hand and two of the right were put out of joint, and that his wrist was seriously injured, constantly pained and troubled him, and was in such condition at the time of the trial, two years after the accident, that he had to keep a leather bandage constantly around it when at work, stating that he could not use the wrist in his work without such bandage, which was exhibited to the jury. There was a sharp controversy between the medical experts as to whether or not any hernia existed; but they all agreed that at the time of the trial there were no objective symptoms of injury to the fingers or wrists that would account for the weakness and pain complained of and testified to by the party suing, and that, if there was any difficulty with the bones, an *x*-ray examination would disclose it. Upon the cross-examination of the party suing, it appeared that a certain physician made an *x*-ray examination of his wrist and fingers, and the physician, who was called by the party as a witness, testified upon his cross-examination that he did make such examination, and that he took *x*-ray photographs of the same, and that he then had such photographs, or the plates, in his possession; that he made the examination and took the photographs in December, 1899, or January, 1900. The accident occurred June 25, 1899. The party's counsel did not ask him or the physician what the *x*-ray examination disclosed as to the condition of the fingers or wrist, nor offer to produce the photographs showing their condition. The court holds that it was reversible error not to give a requested instruction to the jury substantially to the effect that, it appearing that the physician made an *x*-ray examination of the party's fingers and wrist, at his request, and the party having omitted to ask the physician, when called to the witness stand by him, what he discovered from such examination, the jury had the right to assume that the physician's testimony, if given, would have been adverse to the party upon that point. The court says that it was no answer that the company called out the fact that the *x*-ray examination had been made, and might have asked what the result of such examination was. It was not called upon to take the chances of an answer by a hostile witness. It was not bound to prove its defense by the other party's expert physician, who, at such party's request, made a careful examination of the injured parts to ascertain the extent of their injury; and the burden was upon the party suing not only to produce him, but also to interrogate him as to facts within his knowledge relating to the important issue, or expose himself to the hazard of unfavorable inferences. A party seeking to recover for serious injury to his side and wrist ought not to be permitted to call as a witness an expert physician, who at his request examined and learned the condition of both, and interrogate him only as to the condition of one, without exposing himself to the hazard of having the jury infer that, if the witness had been asked as to the condition of the other, his answer would have been unfavorable to the party calling such witness.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures and single case reports are omitted unless of exceptional general interest.

American Medicine (Philadelphia), August 23.

1 *Prognosis and Treatment of Chronic Nephritis. DeLancey Rochester.
2 *On the Influence of the Contents of the Large Intestine upon Strychnin. William Salant.
3 Are Not Some Deaths During Operation in Region Supplied by Trifacial Nerve Due to Reflex Inhibition of Respiration and of the Heart. William H. Good.
4 *Angina Pectoris. Jay Perkins.
5 Tuberculosis: Its Transmission and Prevention. Henry D. Holton.
6 The Importance of Proper Temperature in the Administration of Salt Solution: An Accurate Method of Determining Temperature. R. C. Coffey.
7 Skin Grafting: A New Method. S. T. Rucker.
8 Essentials of an Adequate System of State Care and Supervision for the Insane. Frederick Peterson.
9 The Pirogoff Museum, St. Petersburg. Nicholas Senn.

Medical News (N. Y.), August 23.

10 *Some Points in the Treatment of Acute Rheumatism. W. H. Thomson.
11 *The Symptomatology and Diagnosis of Acute Articular Rheumatism. Leonard Weber.
12 *On the Pathogenesis of Acute Articular Rheumatism. Heinrich Stern.
13 The Complications and Sequelæ of Acute Croupous Pneumonia. H. A. Hare and Arthur Dare.

Medical Record (N. Y.), August 23.

14 *When and Why Does Labor Begin? George P. Shears.
15 *Some Varieties of Surgical Tuberculosis, with Special Reference to a New Method of Treatment. L. F. Garrigues.
16 Primary Carcinoma of the Vermiform Appendix. D. S. D. Jessup.
17 The Venous System of the Temporal Bone and Its Relation to the Complications of Mastoid Disease. Seymour Oppenheimer.
18 A Case of Epithelioma of the Margin of the Eyelid Apparently Cured by the Use of a Solution of Adrenalin Chlorid. Wilbur B. Marple.
19 Summer Diarrhea in Infants and Young Children. Martin J. Synnott.

Boston Medical and Surgical Journal, August 21.

20 *Vaccination and Smallpox—The Preparation of Animal Vaccine. Theobald Smith.
21 Vaccination: The Technique. Eugene A. Darling.
22 Vaccinations: Accidents and Untoward Effects. John H. McCollom.
23 *Smallpox: Its Diagnosis. John T. Bullard.

New York Medical Journal, August 23.

24 *Gas Leakage and the Public Health. James C. Bayles.
25 Clinical Cases of Gas Poisoning. Samuel Lloyd.
26 A Consultation with Professor Dieulafoy on Appendicitis. Edmund L. Gros.
27 Gastric Acidity. L. H. Watson.

28 A Method of Preserving Gross Specimens for Museum and Class Demonstration. W. H. Watters.
29 Observations on the Anatomy, Physiology and Pathology of the Normal Sacculi Ani, and on the Etiology, Pathogenesis, and Diagnosis of the Abnormal Anorectal Pouches, Especially Those Described and Treated by the Late Eminent Dr. Physick. William Bodenhamer.
30 *The Treatment of Hemorrhoids by Enucleation. George B. Evans.
31 Report of a Case of Successful Removal of a Kidney for Intermittent Hydronephrosis. J. B. Boucher.

Philadelphia Medical Journal, August 23.

32 Yellow Fever. Frank H. Hancock.
33 The Etiology and Diagnosis of Fractures in the NewBorn. W. Reynolds Wilson.
34 Unusual Complications Supervening in a Simple Extirpation of a Multilocular Cyst of the Ovary. Burdett A. Terrett.
35 Rectal Stricture, with Remarks on Electrical Treatment. Walter H. White.

St. Louis Medical Review, August 23.

36 Extirpation of the Larynx for Carcinoma; Presentation of a Case, with Specimen. H. L. Nietert.
37 Bacteriologic Findings in a Fatal Case of Tetanus Complicating Vaccination. R. B. H. Gradwohl.

Cincinnati Lancet-Clinic, August 23.

38 Professional Honesty. E. Stuver.
39 *Gonorrheal Hemorrhoids. George J. Monroe.

Physician and Surgeon (Detroit and Ann Arbor, Mich.), July.

40 The Organization of the Medical Profession as It Relates to Counties. Delos L. Parker.
41 Post-Operative Intestinal Obstruction. Frank B. Walker.
42 Case of Injury to the Ureter, and a Case of Injury to the Bladder, Each Complicating Laparotomy for Removal of Bilateral Pus-Tubes. Thomas S. Burr.
43 Suppurative Parotitis Following Removal of Pus-Tubes. William H. Morley.
44 Report of a Case of Sloughing Intrauterine Fibroid. George R. Pray.
45 Ovariotomy Complicated by Intrapelvic Hemorrhage and Hematoma of the Right Broad Ligament. Reuben Peterson.

Interstate Medical Journal (St. Louis), August.

46 The Therapy of Cancer of the Intestines. J. Hochenegg.
47 Angioma of the Liver—Removal—Wound Treated by the Intraperitoneal Method. C. M. Nicholson.
48 Movable Kidney. T. C. Witherspoon.
49 Full-Correction and Under-Correction of Myopia. Arthur C. H. Friedmann.
50 Factitious Ulcer of the Foot. M. F. Engman.
51 Detachment of the Auricle for the Removal of a Migrant Foreign Body in the Ear. James M. Ball.

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1. **Treatment of Chronic Nephritis.**—The method advocated by Rochester is stimulation of the excretions, the use of the stomach tube and hot-air baths. The technique of such a bath at home is very simple. The patient is placed entirely nude between blankets in bed covered by two extra blankets, and steam or hot air is introduced through a nozzle in the blankets and bed-covering. He reports six cases, several of them treated by hot air or steam baths with benefit, and remarks in regard to the surgical treatment that in progressive signs of kidney degeneration shown by persistent increase in albumin when it should be diminishing, surgical procedure seems worthy of consideration, but as a method of treating true chronic nephritis it is entirely out of place. The prognosis in given cases of chronic nephritis depends on the secreting power that may be developed in the kidney with proper treatment and is also materially affected by the condition of the circulatory apparatus. If the arteries are much diseased and the myocardial nutrition interfered with the prognosis is not good even though we may be able to cause free excretion through the skin and bowel. If there is no decided atrophy of the sweat glands interfering with their hypersecretion the prognosis is not good, and an excessive degree of anemia unimproved by treatment is also of bad signification as well as is the frequent occurrence of marked uremic symptoms. We should not try to stimulate into activity an organ that is inflamed or degenerated, by the use of drugs that excite functional activity of that organ. Therefore, we should rarely have recourse to stimulating diuretics or those which increase the arterial pressure. The diet should be looked after; the chief ingredient should be milk. In acute exacerbations or in uremic states milk should be the only article of food. To aid metabolism exercise is necessary; massage where active exercise is impossible should be employed. The dilution of catabolic materials by drinking large amounts of distilled water or one of the mildly alkaline mineral waters is also advised. When toxemia exists, with defective kidney action, wet cupping of the loins, a full dose of calomel, followed by a saline, and hot-air baths employed once or twice daily, preceded if necessary with a small dose of pilocarpin 0.003 to 0.005 gm. After the bowels have thoroughly moved there should be given hypodermically once or twice a day 500 to 1000 c.c. normal salt solution.

2. **Strychnin.**—In his preliminary communication, Salant has found that strychnin is not detectable in the stomach or intestinal canal of rabbits, and he calls attention to the practical bearing of this fact on its application in the human subject.

4. **Angina Pectoris.**—After reporting five cases, Perkins discusses the general subject, which he considers to be rather a disease entity than a group of symptoms. When its diagnosis is only the placing of the individual case under the proper head of true or pseudo angina, it is somewhat difficult, that is, diagnosing organic lesion from toxic hysteria or vasomotor disturbances. In two of his cases he has some question whether the latter condition did not exist. The most important thing in the treatment is to search out the cause of the disease, the cause of the attacks and their relief. The iodid of potassium seems to be the most valuable drug given in moderate doses, 10 to 15 grains three times a day, for a long time. During the attack nitroglycerin is best in many cases, but frequently the only drug that will give relief is morphin, and sometimes a great deal of it. If the pain is not soon controlled by this, to avoid the possibility of its sudden overaction on cessation of pain he would use chloroform or ether.

10. **Treatment of Acute Rheumatism.**—Admitting that rheumatism is due to specific bacterial poisoning, Thomson asks what we can do to arrest the growth of the organism. He doubts that the salicylates have such an effect. In very many cases he believes that rheumatism is preceded by tonsillitis through which the microbes get into the system. His own observations would rate this frequency as high as 25 per cent. Much he thinks can be done by proper prophylaxis in this direction. Another fact in acute rheumatism is the development of remarkable sensitiveness of the skin and he ascribes the profuse sweats of this condition to the cutaneous nerves as much as to the presence of the poison in the blood. We should, therefore, treat the skin. All patients with rheumatic fever should be dressed in flannel and lie between blankets from the very first, and extra precautions be taken with the precardial surface for the same reason. He thinks that sedulous attention to the skin would prove a much better preventive of tedious relapses than the dosing with drugs, and as a prophylaxis to susceptible persons he speaks highly of the old Greek custom of daily bodily inunctions, especially of the feet. The alkalies are not curative of rheumatic fever, but an alkaline condition of the blood is a great safeguard against carditis, and they should not be withheld when the least signs of attending heart trouble develops. The anemia caused by rheumatic toxin is *sui generis*, and iron, instead of curing it, is mischievous. Cod liver oil does much better. Small doses of arsenic also sometimes seem to be of use. He has said nothing about the salicylates because they do not need recommendation. He prefers the strontium salt as being the least depressing and of equal efficacy when given in the same dose. In tedious subacute cases it is often advantageous to omit the salicylates altogether and prescribe lemon juice instead.

11. **Symptomatology and Diagnosis of Acute Articular Rheumatism.**—In considering the differential diagnosis, Weber specially mentions first the acute gonorrheal arthritis which may be multiple, but is more often monarticular, caused by the gonococcus and staphylococcus. It does not react upon salicylates, a helpful fact for diagnosis, which is an important point. He thinks it rather frequent, and there may also be a rheumatic arthritis complicating gonorrhea. Septic arthritis, puerperal or otherwise, from streptococcus infection, is generally purulent. The secondary multiple arthritis of acute infectious diseases, scarlatina, dysentery, cerebrospinal meningitis, perhaps also in rare cases of severe syphilis, will be recognized by careful examination of the history of the case. He had a case of multiple neuritis which had a close resemblance to acute rheumatism as far as pain and tenderness in

the joints and limbs were concerned. Acute osteomyelitis and necrosis of bone may be multiple and have been mistaken for acute rheumatism, but the disease affects the shaft of the bone and causes great constitutional disturbance. Gout and acute rheumatism will not be easily confounded when the gouty attack is of the classic kind, but the matter is not so simple with multiple arthritis with periarticular swelling, tenderness and fever. In a few cases which he attended of this sort a diligent search for subcutaneous deposits of urates around the joints has been rewarded by finding such which proved helpful in the diagnosis.

12. **Pathogenesis of Acute Articular Rheumatism.**—Stern first reviews the history of the bacterial investigation of rheumatism and the theories of the disease, and formulates the following theory of his own: "The rheumatic process is possible only on the basis of increased permeability of white fibrous tissue contained in the habitually engaged parts of the motor apparatus, particularly in that of the serous and synovial membranes. The altered permeability, or a predisposition to the same, may antedate the rheumatic involvement or it may be of synchronous or almost synchronous occurrence with the latter. The augmented permeability of this tissue is effected by the calcium salts of the blood which extract the cementing substance from the fibrous texture. Calcic bodies occurring in loose proteid combination in the blood are thrown out, deposited and temporarily retained in the articular tissues where their reactivity is displayed. The precipitation of the calcium salts from the circulating blood must be due to its altered composition, which latter may have arisen through any physical or metabolic disturbance. The increased permeability may permit passage of such bodies which diffundate not at all, or with difficulty, only through the unaltered membrane. Among the permeating substances we find fibrin whose occurrence is dependent upon the presence of calcium salts. The hematic calcium salts aiding in the formation of fibrin very likely are identical with those which effect extraction of the cementing substance. The passage through the texture and into the synovial tubes, or their analogues, and the temporary retention therein, of abnormal quantities of fluid and salts and voluminous bodies like fibrin—practically a state of disturbed osmotic equilibrium for the time being—is speedily followed by all the usual manifestations of acute articular rheumatism." With the aid of this theory he explains the hereditary transmission of the affection due to the degeneration of non-elastic fibrous tissue that stands at the foundation of acute articular rheumatism, and is passed from parent to offspring. 2. The tendency to occur during a certain period of life when the locomotor apparatus is subjected to the highest degree of activity. The period of active systemic development must often play a specific rôle in the production of rheumatism; likewise physiologic decline, or at least its causative factors, must exert some influence on the immunization of the organism, affecting the regeneration of the white fibrous tissue. On the other hand, atrophic conditions of the tissues, vaccination and phthisis may preclude rheumatism. This substratum of rheumatism process, which is likely to be lasting, and the reinvasion and recurrence of the disease may be thus explained. Also, he thinks, it is often in accord with the sudden onset of the condition. The fluctuating pyrexia and successive invasion of structures in different parts of the organism and self-limitation are all best explained, he thinks, on this theory, which, while hypothetical to some degree and requiring further elaboration, is founded upon much less hypothesis than are both the bacterial and the lactic acid theories and it explains the clinical phenomena much more rationally than either of them.

14. **Beginning of Labor.**—The answer to the question when and why does labor begin is summed up by Shears as follows: "The statement made in many text-books that the cervix maintains its entire length during pregnancy is incorrect. The statement sometimes made that the canal of the cervix remains closed until the beginning of labor is also incorrect. Usually in multiparæ, and occasionally in primiparæ, the canal including the internal os is dilated to the extent of admitting one or two fingers two or three weeks before labor begins. Dilatation of the external or internal os or of the cervical canal is not *per se* an indication of beginning of labor. Dilatation of the clinical internal os or ring of Müller in such a manner that it begins to form part of the uterine cavity is at once the anatomical commencement and the diagnostic sign of true labor. Dilatation at this point is the final result of uterine distention and consequent cervical eversion. Dilatation at this point, owing to the greater resistance offered, by its effect upon the cervical ganglion, and the consequent reflex awakening of effectual uterine contractions, is the physiological cause of labor."

15. **Tuberculosis.**—The special points here made by Garrigues in cases of cervical tuberculosis and that of other glands are that he does not operate on them in their early stages, but would put the stomach in perfect order, stimulate the appetite, enrich the blood and give an alterative that has a specially selective action on the gland. After regulating the digestion he gives a mixture of iron and nux vomica before meals to adults and a teaspoonful of the syrup of hydriodic acid in half a glass of water after meals, children receiving in proportion. The patient is kept out of doors as much as possible, and is directed to drink much milk. Under this treatment, continued from one to two months, the glands usually shrink markedly, and in many cases can scarcely be felt. If the anemia disappears the patient gains in weight. If at the end of that time, however, the glands have not become markedly smaller, they should be removed, but this is an exception. When removed the operation should be thorough so that no infected tissue is left and he applies butter of antimony to produce proper granulation in tuberculous ulcers, etc. He would be hesitant, however, about using it over large vessels and reports one case where he lost a patient from rupture of a vessel, though he does not imply that this was the cause of the accident. The incision should be large enough for all the glands to be removed under the guidance of the eye. In tuberculous peritonitis he advises laparotomy and drainage with iodoform gauze. In tuberculous joint and bone disease he would operate and after curetting he would apply the butter of antimony over the whole infected surface and repeat the proceeding until the appearance of cherry-red granulations assures him that he has to deal with a healthy granulating wound.

20. **Vaccination and Smallpox.**—The methods of preparation of the animal vaccine are described by Theobald Smith. The majority of modern manufacturers seem to use the proliferated epithelium or vaccine pulp more than the serum. It is highly probable that this pulp is richer in vaccine virus than the serum or lymph, and he thinks it the most certain and abundant source. The bacteriology of vaccine is also noticed. Most of the micro-organisms that exist are comparatively harmless, and as a rule seem to have little or no effect on the reaction. According to the German commission about seven years ago, it was found that the bacteria-free vaccine might in one case produce excessive erysipelatous inflammation, while a vaccine containing many bacteria, among them so-called staphylococci, might have no effect whatever. He suspects that idiosyncrasy has much to do with the results. Smith thinks that with modern methods of centrifugalization and sedimentation of the diluted pulp or other methods which will not sacrifice the specific virus or by a combination of these an efficient bacteria-free vaccine may be found in the near future. Tuberculosis, he says, is usually guarded against by autopsies of animals from which vaccine is obtained. While bovine tuberculosis does not appear to be as great a danger to man as formerly held, the inoculation of bacteria is a process quite different from the eating or inhaling of it. No one would want to use vaccine matter with a suspicion of tuberculosis in it. He advocates either the careful supervision of laboratories or the government taking in hand the production of vaccine under the strictest conditions. The vaccine, however, is only one of three factors in determining the success or failure of the process. The other two are satisfactory inoculative technic and the proper care of the patient afterward.

23. **Smallpox: Its Diagnosis.**—In many cases the diagnosis of smallpox can be made at once, but sometimes it becomes a very difficult matter to tell the milder types of the disease from varicella. The first question to be asked is: Has there been any exposure? 2. Has the patient been vaccinated and how recently? Next we should note the constitutional disturbances, sudden onset, temperature, chills, severe frontal headache, backache and so on. He does not consider, however, the latter as pathognomonic as some have held. If the diagnosis is attempted before the eruption influenza must not be overlooked. The symptoms are very similar. There may also be the possibility of confusing the initial rash with scarlatina and measles. When the true eruption occurs there may still be chances for confusion. The conditions may be confounded with pustular eczema, syphilis, impetigo and measles, where the diagnosis between the hemorrhagic forms can not always be made, certain drug eruptions and varicella. In the latter the lesion is superficial, the vesicle is unilocular, the prodromal symptoms are usually slight, the temperature does not increase until the rash appears, the eruption is on instead of under the skin, is soft, indurated, comes out in successive crops and more often on the trunk and chest than on the face. He notices cases where mistakes in diagnosis have been made.

24. **Gas Leakage.**—According to Bayles, there is about 225,000 cubic feet of gas leakage to the mile per annum for the average 6-inch main, and in many cases a great deal more. It is also very explosive. He classifies the dangers from gas leakage into: 1, fire and explosions; 2, asphyxiation; 3, blood poisoning and anemia. It is the latter class especially that is the most dangerous and is practically the only ground for the domestic superstition about sewer gas. He thinks the enormous leakage of illuminating gas is accountable for the general prevalence of anemic conditions in our large cities. The question is whether it can be stopped. We can not depend on the companies, for leakage costs less than the means to prevent it, and nothing will really bring about its prevention except legislation.

30. **Hemorrhoids.**—Evans notices Pennington's operation, quoting his description of it and reports cases. While he thinks it is in some respects ideal, yet its application, like all others, is somewhat restricted. The possibility of perfect hemostasis can not always be secured with this operation, on account of paretic condition of the bowel wall as shown in one of the cases he reports. In cases where the varicosities are comparatively accessible and there is no bowel paresis, and the plug can be securely placed and securely remains for a time, insuring protection from hemorrhage and likely from infection, there is no doubt that it is a very agreeable and satisfactory operation, but it can not be decided in every instance whether it is perfectly applicable. He has operated this way twenty-two times with the best results except in two cases which he reports.

39. **Gonorrheal Hemorrhoids.**—This term is used by Monroe, who thinks it might perhaps be better described as gonorrhea of the rectum. The external appearance is often very similar to external hemorrhoids, but if we cut into the lumps we find no coagulations of blood. They are frequently as painful as ordinary piles. There is a constant exudation of watery mucus, keeping the parts moist and this helps in the diagnosis. There is much pruritus and burning, especially after defecating; the bowels are generally constipated. He reports a case and advises treatment. He would use calomel in one-eighth grain dose every four hours, also a saturated solution of boric acid, one ounce of this to the pint of warm water, injecting it into the rectum. When this passes out he injects nargol, ten grains to the ounce, requiring the last to be retained. This should be used twice a day. Twice a day be bathes the affected parts with peroxid of hydrogen, afterward with liquid extract of hydrastis canadensis and a special ointment of calomel, ichthyol, one dram of each to one ounce lanolin. For the tonic treatment he would use syrup of hypophosphites and the bitter tonics. He thinks the condition is one that has been neglected by rectal specialists and rarely diagnosed by the general practitioner.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures and single case reports are omitted unless of exceptional general interest.

British Medical Journal (London), August 16.

1 A Discussion on the Administrative Prevention of Tuberculosis. John Robertson.
2 The Etiology of Return Cases of Scarlet Fever. C. Killick Millard.
3 The Cause of Return Cases of Scarlet Fever. Mervyn H. Gordon.
4 Discussion of the Relation of Poverty and Disease. Alderman McDougall.
5 The Outbreak of Arsenical Poisoning. C. H. Tattersall.
6 *Plague as a Soil Infection. Reginald Farrar.
7 Infant Mortality. J. Milson Rhodes.
8 The Further Control of Common Lodging-Houses. Meredith Young.

The Lancet (London), August 16.

9 *The Modern Treatment of Pulmonary Consumption. Arthur Latham.
10 Remarks on the Life-History of Filaria Bancrofti and Filaria Immitis. Louis W. Sambon.
11 *Some Further Statistics Regarding the Effect of Inoculation Against Typhoid Fever in South Africa, with Special Regard for the Question of Age. Alexander Crombie.
12 *The Treatment of Appendicitis. John O'Connor.
13 On the Precipitin of Cobra Venom: A Means of Distinguishing between the Proteids of Different Snake Poisons. George Lamb.
14 "Fourth Disease." R. W. Marsden.

Bulletin de l'Academie de Medecine (Paris), July 29.

15 *Report of Committee on Apollinaris Water.
16 *Metalloid Iodin in Therapeutics. Billet.—Applications thérap. de l'iode à l'état métalloïdique.
17 *Ingestion of Gelatin as Treatment for Pathologic Conditions of the Blood. M. Laffont and A. Lombard.—Action de l'emploi de la gelatine, dans l'alimentation, sur la plasticité du sang et les phénomènes path. provoqués par les variations de cette plasticité.
18 *L'éruption de la Martinique. Kermorgant.
19 *Sur l'emploi de l'hermophényl dans le traitement de la syphilis. Hallopeau.
20 *Le calorisateur. J. Glover (Paris).

Gazette de Gynecologie (Paris), January to July.

21 (Nos. 374-5.) Indications et limites du traitement medical dans les infections des adnexa. L. Pichevin.
22 (No. 376.) Troubles génitaux et affections du pharynx et du larynx chez la femme (in women). Mel.
23 (No. 377.) Formes cliniques de la grippe abdominale. E. Michel.
24 (No. 380.) La rachicocainization appliquée comme anesthétique dans les operations. Tsakona (Athens).
25 (No. 382.) Floating and Painful Kidney in Connection with Renal Colic. G. Gleize.—Du rein mobile et douloureux dans ses rapports avec la colique nephretique.
26 (No. 384.) Ovarian Cysts and Pregnancy. J. C. Platon.—Kystes de l'ovaire et grossesse.

La Gynècologie (Paris), vii, 1 and 2.

27 (No. 1.) La métrite parenchymateuse chronique. A. Leredde.
28 I'élytrocoeliotomie diagnostique et prophylactique dans l'avortement tubaire (tubal abortion). G. Spinelli (Naples).
29 Prophylaxie gynecologique. L. M. Bossi (Genoa).
30 (No. 2.) Latent Hemorrhages During Pregnancy. Doléris.—Hémorragies latentes de la grossesse.
31 De la peritonisation dans les laparotomies. Judet.

Deutsche Med. Wochenschrift (Leipsic), August 7.

32 *Bovine and Human Tuberculosis. Max Wolff.—Perlsucht und menschliche Tuberkulose.
33 *Ueber subcutane und submucöse Hart-Paraffin-Prothesen. H. Eckstein.
34 Eine Endemie von croupöser Pneumonie. Tomforde (Hechthausen).
35 Ein heizbarer Universal-Apparat für alle Arten von Ausspülungen, für Spray und Luftdouche. Reinewald.
36 Value of Aspirin in Dysmenorrhea. O. Lehmann.—Dysmenorrhoe und Aspirin.
37 *"Antimorphin." O. Emmerich.

Fortschritte der Medicin (Berlin), February to July.

38 (No. 4.) *Die perorale Intubation. F. Kuhn.
39 (No. 5.) Prognosis of Sutures of the Nerves. P. Speiser.—Prognose der Nervennaht. (Critical Review.)
40 (No. 6.) Nasal and Throat Affections. Wittmaack.—Erkrankungen des Halses und der Nase. (Critical Review.)
41 (No. 7.) Hemolytic Behavior of Serous Fluids. H. Strauss.—Ueber das hämolytische Verhalten seröser Flüssigkeiten.
42 Tardy Traumatic Apoplexy. Huwald.—Traumatische Spätapoplexien. (Critical Review.)
43 (No. 8.) Levulose in Organic Juices. H. Strauss.—Ueber das Vorkommen von Laevulose in den Körpersaften.
44 (No. 9.) "Splashing Sound" and Size of Stomach. F. Schilling.—Plätschergeräusch und Magengrösse.
45 (No. 10.) Zur Diagnostik und Therapie des Pancreas-Diabetes. C. Wegele.
46 Morphology of Exudates. A. Wolff.—Morphologie der Exudatflüssigkeiten.
47 (No. 11.) Fall von Gonococcen-Septicopyaemie. W. Wolff.

48 New Method of Approximate Blood Count from Dried Specimens. M. Einhorn and G. L. Laporte (N. Y.)—Eine neue Methode die Blutkörperchenzahl nach Trockenpräparaten annähernd zu bestimmen.
49 Ueber Antipepsin. H. Sachs.
50 Ueber neuere Antihydrotica. J. Loewenheim. (Critical Review.)
51 (No. 14.) Ueber Bromocoll-Resorbin. R. Ledermann.
52 (No. 15.) Value of Ruhemann's Test for Uric Acid. W. Hanson.—Ueber den klin. Wert der quant. Harnsäurebestimmung nach Ruhemann.
53 (No. 16.) Ueber die Behandlung des Erysipels mit Metakresolanytol. Rosenbaum.
54 Latest Research on Clinical Significance of Acetone, etc. J. Müller.—Neuere Arbeiten über die klin. Bedeutung von Aceton, Acetigessigsäure und beta-Oxybuttersäure.
55 (No. 17.) Die Tuberculose der Chorioidea. R. Greef.
56 (No. 18.) Dumbness in Children. H. Geyzmann.—Ueber die Stummheit der Kinder.
57 (No. 19.) Technic of Saline Transfusion. Schüle.—Zur Technik der Transfusion von physiol. Kochsalzlösung.
58 Recent Progress in Physical Diagnosis of the Heart. A. Hesse.—Ueber die jüngste Fortschritte aus dem Gebiete der phys. Diagnostik des Herzens. (Critical Review.)

Therapeutische Monatshefte (Berlin), July.

59 Application of Camphor in Treatment of Morphin Addiction. J. Hofmann.—Ueber die Anwendung des Kampfers bei Morphin-Entziehung.
60 *Die subcutane Gelatine-Injektionen und ihre Gefahren. Margoniner and Hirsch.
61 Prophylaxis of Epidemics from the Standpoint of Physical Science. C. du Bois-Reymond.—Bekämpfung der Seuchen naturwissenschaftlich betrachtet.
62 Beiträge zur Diagnose und Behandlung rheumatische Affectionen. R. Bloch.
63 Noch ein Wort über das Pertussin. A. Model.
64 Relations between Defective Psychic Development and Disturbances in Speech. W. Oltuszewski.—Vom Verhältniss der psych. mangelhaften Entwicklung zu verschiedenen Kategorien der Sprachstörungen. (Concluded from preceding number.)
65 Ueber Diabetes Mellitus. Lenne. (Concluded from preceding number.)
66 *Zur Anwendung des "Anästhesins." C. Kassel.

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6. **Plague as a Soil Infection.**—Farrar remarks that plague is epidemic in certain districts of China. Given two villages not more than 500 yards apart, under precisely the same conditions as to elevation, exposure, etc., one may suffer and the other remain exempt. It is difficult to believe, with the mortality that we have, that plague epidemics remain strictly local, and that in spite of the nomadic habits of the people. The policy successfully adopted in India in dealing with epidemics has been that of evacuation, a policy fully sanctioned by the most enlightened experience. The removal of the inhabitants of an infected town to camps has magical effects. Farrar is inclined to think that the soil becomes infected and that infection takes place largely through going barefoot. Europeans who wear shoes are rarely affected, and this is true not only in regard to the ordinary population, but those who have to do with plague cases. He is, therefore, inclined to think that there is a soil infection and that direct personal contagion of the disease except through pneumonic cases is very rare.

9. **Pulmonary Tuberculosis.**—Latham reviews the treatment of pulmonary tuberculosis, calling attention to the futility of various remedies which have been employed from time to time and the importance of exercise, ventilation, etc., and good feeding, as can be best obtained in a sanatorium where no drugs are used in the routine management of cases, but only to meet complications such as hemorrhage, diarrhea, etc.

11. **Typhoid Inoculation.**—This statistical study by Crombie appears to show that a single inoculation has some protective power, but a double inoculation increases the susceptibility to the disease.

12. **Appendicitis.**—O'Conor insists on certain points: 1. As to the uselessness of allowing local suppuration to take its course in appendicitis. He does not think there is much danger in separating adhesions from the presence of pus; adhesions are only there to meet the conditions, and when these are removed they dissolve of themselves in many cases. He believes in a large incision, three or four inches, in opening appendiceal abscess and in cases of non-purulent appendicitis he makes a two-inch incision, which can be extended if the appendix can not be brought easily to the surface.

15. **Report on Apollinaris Water.**—The Academy passed on in 1868 and admitted Apollinaris water to France as a natural mineral water of a certain composition. The water has changed slightly since then and it is now artificially charged, so the Academy passed a resolution accepting the report of the committee to drop it from the list of natural mineral waters.

16. **Metalloid Iodin in Therapeutics.**—Billet has tried to remedy the fact that iodin in the officinal preparations in benzine, carbon sulphid and chloroform is not in a metalloid state. He endeavored to find some substance to combine with it which would not alter the physical nor chemical properties of the iodin. He found that these conditions were fulfilled by a special petroleum ether composed of pentane and hexane, which distils below 55 C. and boils below 60 C., with a density of 0.628 to 0.630. The solution is stable and the iodin in it retains its natural state and all its bactericidal and antiseptic properties. This ether will dissolve 60 gm. of iodin to the liter. He usually prefers a solution of bi-sublimated iodin, 25 gm. to 1 liter of this petroleum ether distilling below 55 C. This solution has no caustic properties and can even be applied to the face and sprays readily. The ether dissolves the fatty matter in the skin and by its superior osmotic powers penetrates to a remarkable depth and carries the iodin with it. The ether evaporates almost instantly and the iodin is deposited in the form of crystals.

17. **Gelatin in Food as Treatment for Deficient Plasticity of Blood.**—The authors of this article attribute the phenomena of glycosuria, albuminuria and hemophilia to a primary alteration of the blood, entailing some modification of its density, and they suggest as treatment the ingestion of a certain amount of gelatin. It is readily absorbed through the stomach and 15 gm. a day can be taken in this way without inconvenience. It has shown remarkable efficacy in controlling the tendency to hemophilia. In albuminuria and diabetes the effect is transient, that is, it ceases with the suspension of the gelatin, which should therefore be given more or less continuously. Lancereaux welcomes this new utilization of the coagulating and hemostatic properties of gelatin as a valuable contribution to therapeutics, effective while absolutely harmless.

18. **The Eruption at Martinique.**—Kermorgant summarizes the reports presented by the medical officers of the colonial troops at Martinique in regard to the eruption. In Saint Pierre every one was killed, the clothing burned completely off, the limbs detached in many instanes and the skulls burst and empty, the contents expelled through wide cracks. In some of the victims the abdomen had burst while the intestines depended intact. The tissues looked as if they had been burnt by a gas flame. The limbs were in exaggerated flexion, the hands in some of the cadavers twisted back on the forearm and this again on the upper part of the arm, while the head and trunk were almost invariably in actual opisthotonos. About two miles out from the city the victims seemed to have succumbed more to suffocation than to fire. The clothing was not all burned off, and parts of the body were intact. Farther still from the scene of the explosion the lesions were less severe and a large number of the victims were taken on the gunboat Suchet to the military hospital at Fort-de-France. Nine died on the way and thirty-two were received in the hospital. All were intensely excited and suffering such pain that they groaned or screamed constantly, and some complained that they could not swallow and respiration was difficult. The nostrils were obstructed by volcanic mud and patches of it on the skin looked like brown sealing wax after the blisters had broken. Attempts to clean the pharynx brought away debris of exfoliated mucosa. Several who had exhibited symptoms of internal burns succumbed during the night or next day. One native, severely burned, died in intense fever with anuria, another whose feet were burned died from tetanus. A woman with burns of the third degree on the legs and thighs had a temperature of 40 C. after the eschars had fallen, although the wounds were healing perfectly; diarrhea with dysenteriform stools followed and double broncho-pneumonia, but no albuminuria or nervous troubles. She died also. All the wounds were dressed with picric acid, which did not induce any

symptoms of intolerance notwithstanding the large extent of surface on which it was applied. The patients were all relieved at once, and the repair of the tissues was rapid and almost entirely without suppuration. All the survivors had left the hospital by the twenty-second day, and two-thirds of those who had been received were dismissed cured without presenting the slightest retraction or vicious cicatrix, interfering with normal movements. The deaths at Carbet, between two and three miles from the scene of the explosion in Saint-Pierre, were evidently due to suffocation from inhalation of gases emitted by the volcano under great pressure, and so hot that they caused the instantaneous coagulation of the blood, such as was observed at the burning of the Opéra-Comique at Paris. It is equally possible that death was due to electric phenomena.

19. **Hermophenyl in Treatment of Syphilis.**—Hermophenyl is the name given to the mercury phenol disulphonate of sodium by Lumière, who produced it by the same technic as is used in the production of the cacodylates. Contrary to the ordinary products of mercury, it does not precipitate the albuminoids, is not precipitated itself by hydrochloric acid, hydrosulphate of ammonia nor sodium, and is not altered by a temperature of 120 C. (249 F.) A sheet of gold leaf left in a 5 per cent. solution of hermophenyl for forty-eight hours was not affected. It forms a white very soluble powder, containing 40 per cent. mercury. It is very slightly toxic, the fatal dose for a guinea-pig by the mouth is 20 cg. per kilogram and by subcutaneous injection, 125 mg. A 1 to 5 per 1000 solution arrests all vegetation and kills the principal micro-organisms, and even a 1 to 2 per cent. solution does not induce local irritation nor pain. Hallopeau reports that he has used the hermophenyl in 20 cases of secondary syphilis and found that its action was fully equal to that of the ordinary mercurial preparations, while it has the advantage that it can be administered in large doses by the mouth without causing digestive disturbances. At first he tried it on 30 patients in intramuscular injections but found the buccal administration preferable. His experience superposed on that of others, indicates that the new preparation will find a useful field in therapeutics to alternate with other methods of mercurial treatment or substitute them under certain conditions.

20. **The Calorisateur.**—Glover's instrument is for the application of medicinal substances to the upper air and digestive passages. A current of superheated air is driven into a non-volatile medicinal fluid, heating it, sterilizing it and expelling it in the form of a medicated spray at body temperature.

32. **Bovine and Human Tuberculosis.**—Wolff had occasion to observe a case of fatal primary tuberculosis of the intestines in a man of 63, a master cabinet maker. It fulfilled in every particular the conditions declared necessary by Koch for the assumption of a primary tuberculous affection of the intestines. Two guinea-pigs were inoculated with matter from the spleen and both developed tuberculosis. A calf was then inoculated with the tuberculous organs of one of the guinea-pigs, after negative reaction to the tuberculin test. The calf was killed eighty-three days after the inoculation, and the internal organs were found the seat of the typical lesions of a severe case of bovine tuberculosis, that is, Perlsucht. Wolff's experiences further confirmed the fact, as he describes in detail, that animals and persons infected with tuberculosis by way of the alimentary canal may develop typical tuberculosis without exhibiting the slightest macroscopic lesion in the intestines. This explains the rarity of primary intestinal tuberculosis. He is also convinced that the infection from substances ingested occurs by way of the mouth in the majority of cases, principally through the tonsils.

33. **Paraffin Prothesis.**—Eckstein extols the advantages of using "hard paraffin," not melting below 57 to 60 C. He slips a piece of rubber tubing over the syringe to keep in the heat.

37. **"Antimorphin."**—Analysis of this medicine advertised as a cure for morphin addiction, shows that it contains a considerable proportion of morphin.

38. **Peroral Intubation.**—The laryngeal tube extends beyond the teeth in Kuhn's peroral intubation. It serves not only as a laryngeal tube but also as a speculum for the upper air passages, a gag and a dilator. He advises it for use in anesthesias, etc.

60. **Gelatin Injections and Their Dangers.**—Hirsch relates two cases in which subcutaneous injection of gelatin proved fatal, and has collected five others. This raises to seven the total of deaths from this source in Germany, all succumbing with symptoms of tetanus. He also reports nine cases in which the gelatin injections proved a life-saving measure, mostly in cases of protracted hemoptysis.

66. **Anesthesia with "Anesthesin."**—Kassel is enthusiastic in his commendation of anesthesin for various purposes. It has proved especially useful in his experience for persons with dysphagia from ulcerations in the larynx. The anesthesia induced lasts two to twelve hours. The patients can inhale the anesthesin through an ordinary small inhaler. It thus advantageously substitutes orthoform for the purpose.

Books Received.

Acknowledgment of all books received will be made in this column, and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

MASSAGE AND THE ORIGINAL SWEDISH MOVEMENTS. Their Application to Various Diseases of the Body. Lectures Before the Training Schools for Nurses Connected with the Hospital of the University of Pennsylvania, German Hospital, Woman's Hospital, Philadelphia Lying-in Charity Hospital, the Philadelphia Polyclinic and College for Graduates in Medicine, and the Kensington Hospital for Women, of Philadelphia. By Kurre W. Ostrom, from the Royal University of Upsala, Sweden. Fifth Edition, Revised and Enlarged, with 115 Illustrations. Cloth. Pp. 181. Price, $1.00. Philadelphia: P. Blakiston's Son & Co. 1902.

THE PRACTICAL MEDICINE SERIES OF YEAR BOOKS, Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Issued Monthly. Under the General Editorial Charge of Gustavus P. Head, M.D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. Volume VIII. Pediatrics and Orthopedic Surgery. Edited by W. S. Christopher, M.D., John Ridlon, A.M., M.D., and Samuel J. Walker, A.B., M.D. July, 1902. Cloth. Pp. 231. Price, $1.50. Chicago: The Year Book Publishers. 1902.

BIOLOGIC SCIENCE. Vital Force the Only Power and Active Principle That Can Operate the Living Human Organism. Thought Exercise for the Nineteenth Century. A Criticism on the Teachings of Prof. Rudolph Virchow of the University of Berlin, and Prof. Jacques Loeb of the University of Chicago. By W. R. Dunham, M.D. Paper. Pp. 50. Keene, N. H.: Published by the Author. 1902.

PHOTOGRAPHIC ATLAS OF THE DISEASES OF THE SKIN. A Series of Eighty Plates, Comprising More Than One Hundred Illustrations, with Descriptive Text and a Treatise on Cutaneous Therapeutics. By George Henry Fox, A.M., M.D., Clinical Professor of Diseases of the Skin, College of Physicians and Surgeons, N. Y. Part XIV. Price, $1.50. Philadelphia and London: J. B. Lippincott Co. 1901.

APPLIED SURGICAL ANATOMY Regionally Presented for the Use of Students and Practitioners of Medicine. By George Woolsey, A. B., M.D., Professor of Anatomy and Clinical Surgery in the Cornell University Medical College. With 125 Illustrations, Mostly Colored. Cloth. Pp. 521. Price, $5.00. New York and Philadelphia: Lea Brothers & Co. 1902.

REPORT ON OBSERVATIONS MADE ON THE CATTLE AT THE EXPERIMENTAL STATION AT OUTREMONT, P. Q. Recognized to Be Tuberculosis by the Tuberculin Test. By Prof. J. Georg Adami, M.A., M.D., and C. F. Martin, M.D. Paper. Pp. 32. Ottawa: Government Printing Bureau. 1899.

THE THEORY AND PRACTICE OF INFANT FEEDING, with Notes on Development. By Henry Dwight Chapin, A.M., M.D., Professor of Diseases of Children at the New York Post-Graduate Medical School and Hospital. With Numerous Illustrations. Cloth. Pp. 325. Price, $2.25. New York: Wm. Wood & Co. 1902.

REPORT OF THE MINISTER OF AGRICULTURE FOR THE DOMINION OF CANADA, for the Year Ended Oct. 31, 1901. Printed by Order of Parliament. Paper. Pp. 173. Ottawa: S. E. Dawson, Printer. 1902.

ANNUAL REPORT OF THE DEPARTMENT OF PUBLIC HEALTH OF SAN FRANCISCO for the Fiscal Year ending June 30, 1901. Paper. Pp. 271. San Francisco: The Hinton Printing Co. 1901.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. Vol. XIV. For the Year 1901. Cloth. Pp. 369. Philadelphia: Wm. J. Dornan. 1902.

The Public Service.

Army Changes.

Movements of Army Medical Officers under orders from the Adjutant-General's Office, Washington, D. C., Aug. 14 to 20, 1902, inclusive:

John D. Brooks, contract surgeon, member of a board at Fort

Yellowstone, Wyo., to examine officers of the Army for promotion.

George L. Cable, contract surgeon, former orders directing him to proceed from Fort Sam Houston to Eagle Pass, Tex., revoked.

Christopher C. Collins, lieutenant and asst.-surgeon, U. S. A., leave of absence extended seven days.

William H. Corbusier, major and surgeon, U. S. A., member of a board at Governor's Island, N. Y., to examine officers of the Army for promotion.

Elmer A. Dean, lieutenant and asst.-surgeon, U. S. A., from Columbus Arsenal, Tenn., on the expiration of his present leave of absence, to duty at Fort Strong, Mass.

James J. Edmonstone, captain and asst.-surgeon, U. S. Vols., having tendered his resignation, is honorably discharged from the service of the United States, to take effect Sept. 18, 1902; leave of absence granted to include Sept. 18, 1902.

Rudolph G. Ebert, major and surgeon, U. S. A., member of a board at Vancouver Barracks, Wash., to examine officers of the Army for promotion.

Harry L. Gilchrist, lieutenant and asst.-surgeon, U. S. A., member of a board at Vancouver Barracks, Wash., to examine officers of the Army for promotion.

Alfred C. Girard, colonel and assistant surgeon-general, in addition to his present duties, is detailed a member of the board appointed to meet at the Army Medical Museum, Washington, D. C., for the examination of candidates for admission into the Medical Corps of the Army.

J. W. Holland, contract surgeon, leave of absence for one month granted, to take effect Aug. 20, 1902.

Park Howell, lieutenant and asst.-surgeon, U. S. A., when relieved from duty at Fort Clark, Tex., by the arrival of Contract Surgeon C. S. Snyder, to report for duty at Camp Eagle Pass, Tex.

Harry M. James, contract surgeon, relieved from duty at Camp Thomas, Ga., to proceed to his home at New York City, N. Y., for annulment of contract.

Edgar A. Mearns, major and surgeon, U. S. A., member of a board at Fort Yellowstone, Wyo., to examine officers of the Army for promotion.

Robert H. Pierson, contract surgeon, former orders appointing him a member of a board at Governor's Island, N. Y., to examine officers of the Army for promotion are amended to read: Robert H. Pierson, lieutenant and asst.-surgeon, U. S. A.

Thomas L. Rhoads, lieutenant and asst.-surgeon, U. S. A., having arrived at San Francisco, Cal., will report for assignment in the Department of California.

Edmund D. Shortlidge, lieutenant and asst.-surgeon, U. S. A., is relieved from further duty in the Division of the Philippines and will proceed to San Francisco, Cal. On arrival he will report to the Adjutant-General of the Army for further orders.

George A. Skinner, captain and asst.-surgeon, U. S. A., now at Fort Harrison, Mont., will proceed to Fort Snelling, Minn., for duty at that post.

C. D. Snyder, contract surgeon now at Fort Niobrara, Neb., will proceed to Fort Clark, Tex., for duty at that post.

Henry D. Snyder, captain and asst.-surgeon, U. S. A., is relieved from duty as attending surgeon and examiner of recruits at New York City, N. Y., to take effect on the expiration of his present leave of absence; he will then report for duty at Plattsburg Barracks, N. Y.

William E. Vose, lieutenant and asst.-surgeon, U. S. A., having reported his arrival at San Francisco, will proceed to Columbia, Tenn., for duty at the Columbia Arsenal.

William J. Wakeman, major and surgeon, U. S. A., on being relieved from duty in New York City, will proceed to Fort McPherson, Ga., for duty at that post.

William L. Whittington, major and surgeon, U. S. Vols., leave of absence from the Division of the Philippines extended one month.

James S. Wilson, captain and asst.-surgeon, U. S. A., is honorably discharged by the Assistant Secretary of War, as major and surgeon, U. S. Vols., only to take effect Aug. 15, 1902; having reported his arrival at San Francisco, he will proceed to New York City, and relieve Major William J. Wakeman from temporary duty as attending surgeon and examiner of recruits in that city.

APPOINTMENTS, PROMOTIONS, CASUALTIES, ETC.,

in the Medical Department, recorded in the Adjutant-General's office between July 15 and Aug. 15, 1902:

Regular Army, Appointments.—To be assistant-surgeons with the rank of first lieutenant, to date from June 24, 1902: Reynold M. Kirby-Smith of Tennessee, William H. Moncrief of Georgia, George L. Collins of Massachusetts, Charles F. Morse of Vermont, Samuel E. Lambert of Alabama, Haywood S. Hansell of Georgia, Junius C. Gregory of Virginia, Clarence H. Connor of Iowa, Jay W. Grissinger of Pennsylvania, Will L. Pyles of the District of Columbia, Thomas Devereux of Minnesota, Robert H. Pierson of New York, Cary A. Snoddy of Tennessee, and Harry S. Purnell of Maryland.

Retirement.—Marshall W. Wood, major and surgeon, Aug. 12, 1902, for disability incident to the service.

Resignation.—Lieutenant William J. Calvert, asst.-surgeon, Aug. 9, 1902.

Volunteers, Appointments.—Captain Joseph C. Reifsnyder, asst.-surgeon, U. S. Vols., to be surgeon, with the rank of major, April 15, 1902: John P. Kelly of Florida, contract surgeon, to be asst.-surgeon, U. S. Vols., with the rank of captain, June 20, 1902.

Honorably Discharged.—Captain W. Hoepfner Winterberg, asst.-surgeon, July 31, 1902.

Navy Changes.

Changes in the Medical Corps of the Navy, week ending August 23:

P. A. Surgeon E. O. Huntington, granted sick leave for three months.

Surgeon George A. Lung, ordered to the Bureau of Medicine and Surgery, Navy Department.

Marine-Hospital Changes.

Official list of the changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Aug. 21, 1902:

Surgeon Fairfax Irwin, granted leave of absence for one month from September 1.

Surgeon P. C. Kalloch, granted leave of absence for 3 days from August 27.

Surgeon A. H. Glennan, to report at Washington, D. C., for special temporary duty.

Surgeon S. D. Brooks, to assume temporary command of the Portland, Me., quarantine, during absence, on leave, of Surgeon P. C. Kalloch.

P. A. Surgeon S. B. Grubbs, granted leave of absence for fourteen days from August 19.

Asst.-Surgeon L. D. Fricks, relieved from duty at Boston, Mass., and directed to proceed to Savannah, Ga., quarantine, and assume temporary command during absence, on sick leave, of A. A. Surgeon W. J. Linley.

Asst.-Surgeon V. G. Heiser, to proceed to Immigration Depot, New York City, for special temporary duty.

Asst.-Surgeon T. D. Berry, granted fifteen days' extension of leave of absence, on account of sickness, from August 17.

Asst.-Surgeon J. W. Trask, relieved from duty at Detroit, Mich., and directed to proceed to Fort Stanton, N. M., and report to medical officer in command for duty and assignment to quarters.

A. A. Surgeon W. A. Kimmet, granted leave of absence for thirty days from August 10.

A. A. Surgeon W. J. O'Reilly, granted leave of absence for eight days from August 18.

Pharmacist and Chemist Henry Hahn, granted leave of absence for twelve days from August 18.

Senior Pharmacist Charles Miller, granted leave of absence for thirty days from September 9.

Senior Pharmacist J. V. LaGrange, granted leave of absence for thirty days from September 2.

Junior Pharmacist M. H. Watters, granted leave of absence for thirty days from August 18.

APPOINTMENT.

John William Trask of Michigan, commissioned (recess) as asst.-surgeon.

BOARDS CONVENED.

Board convened to meet at Southport, N. C., Aug. 21, 1902, for the physical examination of an officer of the Revenue Cutter Service. Detail for the Board: Surgeon John Godfrey, chairman; Asst.-Surgeon T. B. McClintic, recorder.

Board convened to meet at the U. S. Marine-Hospital, Stapleton, N. Y., Aug. 25, 1902, for the physical examination of officers of the Revenue Cutter Service. Detail for the Board: Surgeon Preston H. Bailhache, chairman; P. A. Surgeon A. C. Smith, recorder.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Aug. 23, 1902:

SMALLPOX—UNITED STATES.

California: San Francisco, Aug. 3-10, 2 cases.

Florida: Pensacola, Aug. 8-16, 4 cases.

Massachusetts: Boston, Aug. 8-16, 8 cases, 3 deaths; Brockton, Aug. 8-16, 1 case; Cambridge, Aug. 2-16, 5 cases, 3 deaths; Everett, Aug. 8-16, 1 case; Fitchburg, Aug. 8-16, 1 case; Somerville, Aug. 8-16, 1 case.

Michigan: Detroit, Aug. 8-16, 2 cases.

Missouri: St. Joseph, Aug. 2-16, 36 cases; St. Louis, Aug. 10-17, 2 cases.

Montana: Butte, Aug. 10-17, 1 case.

Nebraska: Omaha, Aug. 8-16, 4 cases.

New Jersey: Aug. 8-16, Camden, 1 case; Newark, 3 cases, 3 deaths.

New York: New York, Aug. 8-16, 2 cases, 1 death.

Ohio: Cincinnati, Aug. 8-15, 1 case; Cleveland, Aug. 8-16, 58 cases, 8 deaths; Hamilton, Aug. 2-9, 1 case.

Pennsylvania: Aug. 8-16, Altoona, 1 death; Johnstown, 3 cases, 2 deaths; McKeesport, 1 death; Philadelphia, 1 case, 1 death.

Rhode Island: Providence, Aug. 8-16, 1 death.

South Carolina: Charleston, Aug. 8-16, 2 cases.

Utah: Salt Lake City, Aug. 8-16, 2 cases.

Wisconsin: Milwaukee, Aug. 8-16, 3 cases.

SMALLPOX—FOREIGN.

Austria: Prague, July 26-Aug. 2, 2 cases.

Barbadoes: July 29, 15 cases.

Belgium: Antwerp, July 18-25, 4 cases.

Great Britain: Liverpool, Aug. 2-9, 11 cases, 1 death; London, July 26-Aug. 2, 44 cases, 7 deaths.

India: Bombay, July 15-22, 3 deaths; Karachi, July 6-20, 1 case; Madras, July 12-18, 2 deaths.

Italy: Palermo, July 26-Aug. 2, 8 cases.

Japan: Formosa, May 1-31, 22 cases, 4 deaths.

Russia: Moscow, July 17-26, 5 cases, 3 deaths; Odessa, July 26-Aug. 2, 3 cases; St. Petersburg, July 17-26, 1 case.

Straits Settlements: Singapore, June 14-July 12, 2 deaths.

YELLOW FEVER.

Colombia: Panama, Aug. 4-11, 1 case, 1 death.

Mexico: Coatzacoalcos, Aug. 2-9, 9 cases, 1 death; Progreso, July 15-Aug. 9, 4 cases, 3 deaths.

CHOLERA.

China: Niuschwang, July 12-19, 66 deaths.

Egypt: Aboukoukas, Aug. 19, 78 cases, 38 deaths; Assiout Province, Aug. 19, serious; Cairo, Aug. 19, 3 cases; Charkich, Aug. 19, 19 cases; Minieh, Aug. 19, 43 cases; Alexandria, Aug. 19, 2 cases.

India: Calcutta, July 12-19, 73 deaths; Karachi, July 6-20, 191 cases, 130 deaths.

Japan: Formosa, May 1-31, 7 cases, 4 deaths; Fukuoka Ken, to July 10, 101 cases, 56 deaths; Kobe, July 15, present; Nagasaki, July 1-19, 5 cases, 2 deaths; Mogi, to July 20, 23 cases, 16 deaths; Okayama, Aug. 9, present; Tokyo, July 9, 1 death.

Straits Settlements: Singapore, June 14-July 12, 170 deaths.

PLAGUE.

Australia: Brisbane, April 1-May 31, 45 cases, 17 deaths.

India: Bombay, July 15-22, 37 deaths; Calcutta, July 12-19, 19 deaths; Karachi, July 6-20, 74 cases, 60 deaths.

Japan: Formosa, May 1-31, 700 cases, 555 deaths.